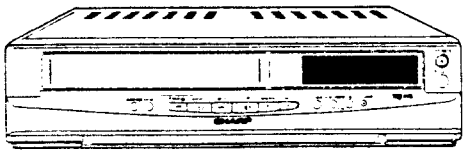
SHARP SERVICE MANUAL

S93F1VC-A32B/

VHS VIDEO CASSETTE RECORDER



MODELS VC-A32B VC-A55B

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

SPECIFICATIONS

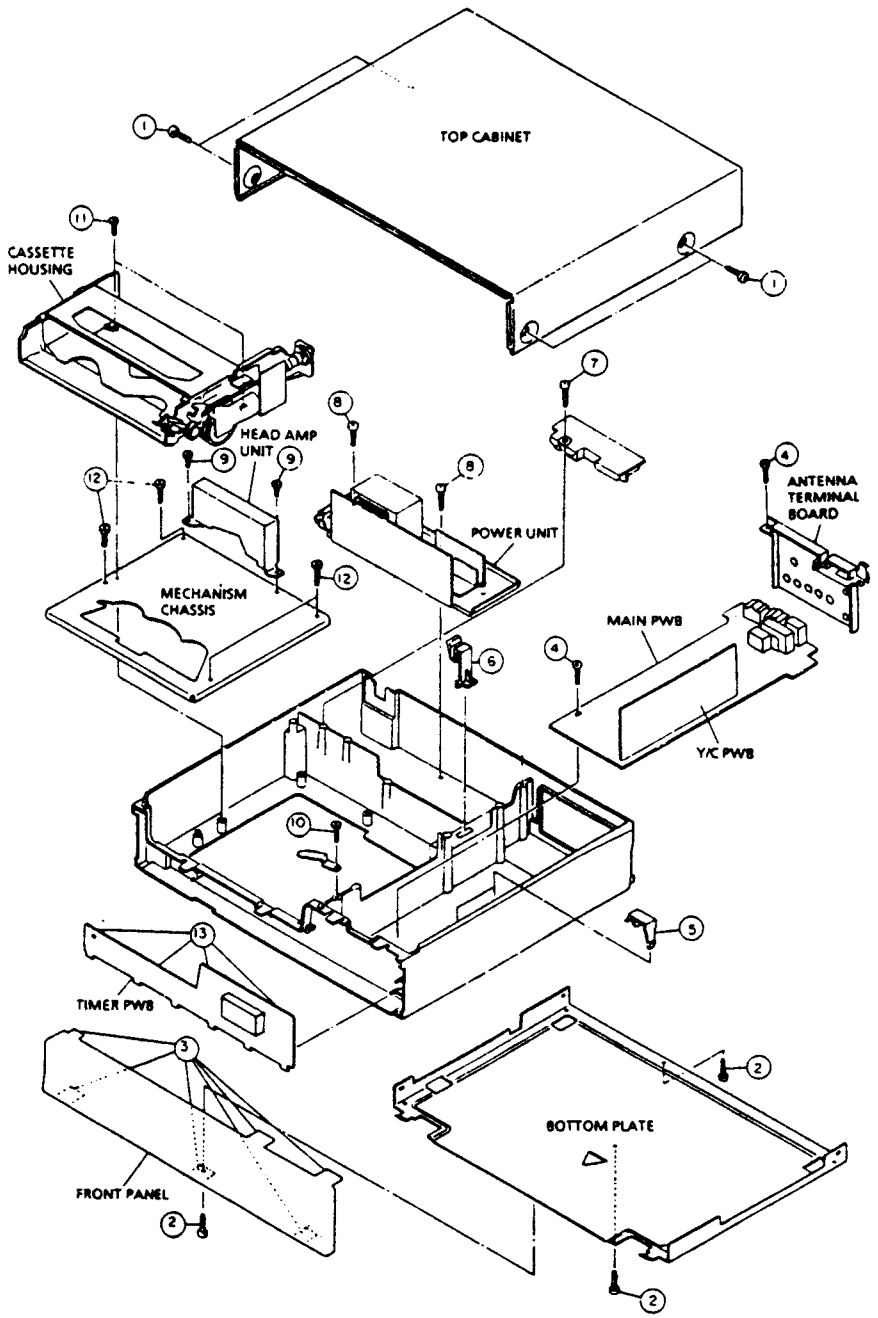
Format:	VHS PAL standard
Video recording system:	Two rotary heads helical scan system
Video signals:	PAL/MESECAM colour and CCIR system B/G, D/K signals
Recording/playing time:	240 minutes max. with SHARP E-240 tape (SP mode) 480 minutes max. with SHARP E-240 tape (LP mode) (VC-A55B)
Tape width:	12.7mm
Tape speed:	23.39mm/s(SP mode) 11.70mm/s(LP mode) (VC-A55B)
Antenna:	75 ohm unbalanced
Receiving channel:	VHF channel S1-S20 / E2-E12 UHF channel E21-E69
RF converter output signal:	UHF channel E30-E39(adjustable).Preset to channel E36
Power requirement:	AC 200~240V, 50/60Hz
Power consumption:	Approx. 26 W (220V, 50Hz)
Operating temperature:	5°C to 40°C
Storage temperature:	– 20°C to 60°C
Weight:	5.2kg
Dimensions:	380mm (W) × 354.5mm (D) × 82.5mm (H)
Video Signals	
Input:	1.0 Vp-p, 75 ohm
Output:	1.0 Vp-p, 75 ohm
Audio Signals:	(0 dB = 0.775 Vrm)
Input:	Line: – 8dB, more than 47k ohm
Output:	Line: – 8dB, less than 1 k ohm
Accessories included:	75 ohm coaxial cable Operation manual Infrared remote control Battery

*As part of out policy of continuous improve-ment, we reserve the right to alter design and specifications without notice.

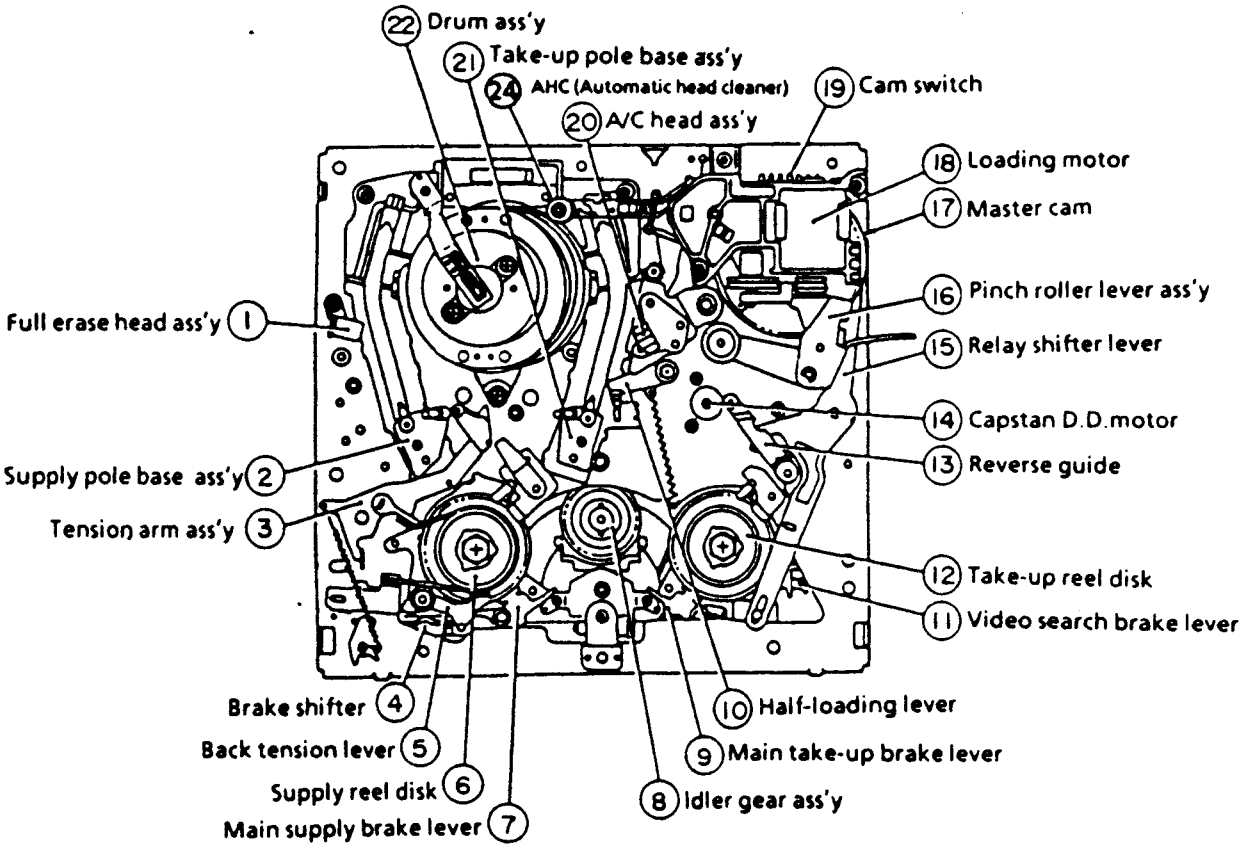
Note: The antenna must correspond to the new standard DIN 45325 (IEC 169-2) for combined VHF/UHF antenna with 75 ohm connector.

DISASSEMBLY AND REASSEMBLY

TOP CABINET	• Remove 4 screws ①. • Remove the top cabinet by sliding it backward.
BOTTOM PLATE	• Remove 3 screwe ②.
FRONT PANEL	• Remove 6 clips ③ from the upper and lower parts of front panel respectively, and remove the front panel.
MAIN PWB/ ANTENNA TERMINALBOARD	• Remove 2 screws ④. • Remove 2 Y/C PWB holders ⑤ and 1 main PWB holder ⑥.
POWER UNIT	• Remove 1 screws ⑦. • Remove 2 screws ⑧.
HEAD AMP. UNIT	• Remove 2 screwe ⑨. • Since the number of screw types handled here is 2, do not take a wrong one when installing.
CASSETTE HOUSING	• Remove 1 screws ⑩ and 2 screws ⑪.
MECHANISM CHASSIS	• Remove 4 screws ⑫
TIMER PWB	• Remove 4 clips ⑬.

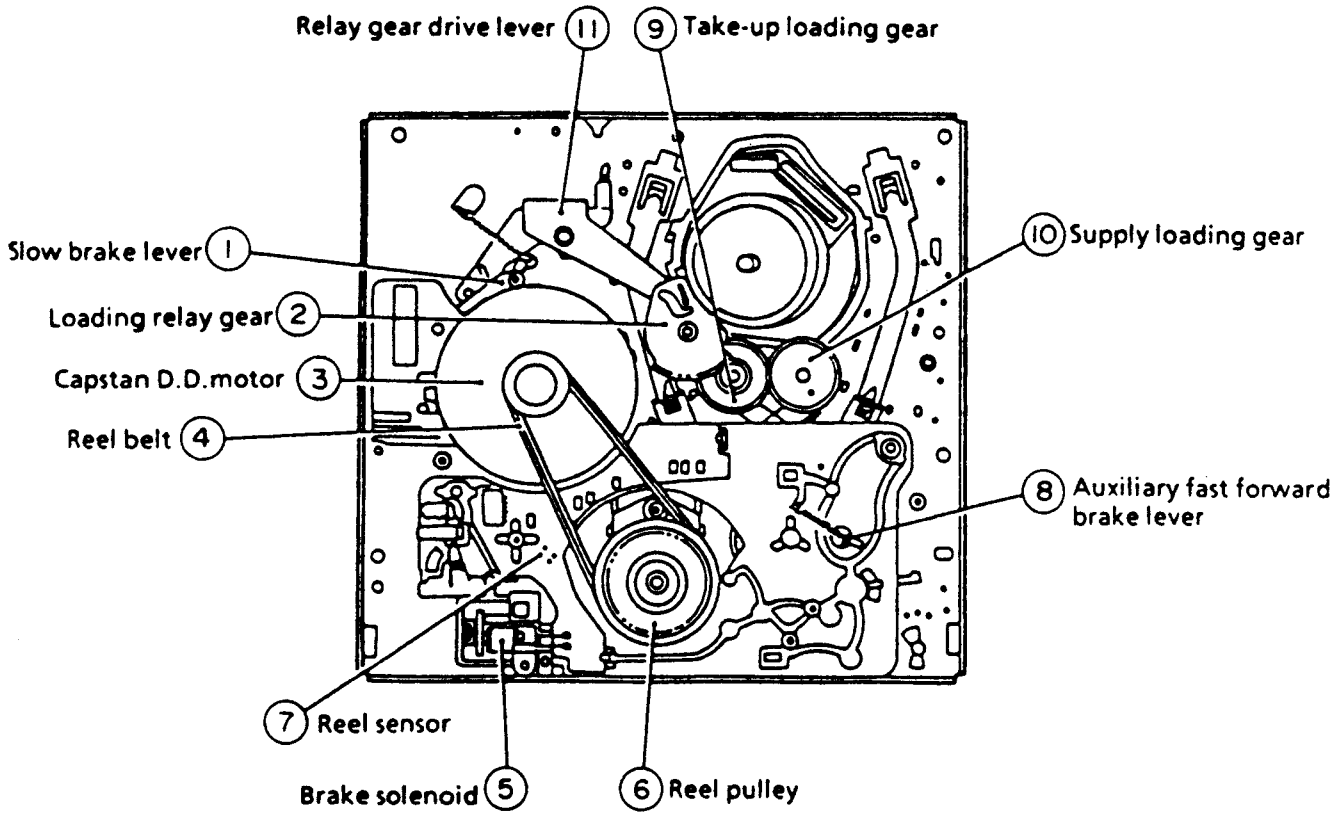


FUNCTION OF MAJOR MECHANICAL PARTS (TOP VIEW)


22 Drum ass'y
21 Take-up pole base ass'y
24 AHC (Automatic head cleaner)
19 Cam switch
20 A/C head ass'y
18 Loading motor
17 Master cam
Full erase head ass'y 1
16 Pinch roller lever ass'y
15 Relay shifter lever
14 Capstan D.D.motor
Supply pole base ass'y 2
13 Reverse guide
Tension arm ass'y 3
12 Take-up reel disk
11 Video search brake lever
Brake shifter 4
10 Half-loading lever
Back tension lever 5
9 Main take-up brake lever
Supply reel disk 6
8 Idler gear ass'y
Main supply brake lever 7

No.	Function	No.	Function
1.	Full erase head ass'y Erase the whole records on the tape in the recording mode.	11.	Video search brake lever It is in contact with the take-up reel disk normally, and brakes it to a certain degree. It applies larger brake in the video search rewind mode.
3.	Tension arm ass'y Detects the tension of tape while running, and brakes the supply reel disk via the tension band.	13.	Reverse guide Pulls out the tape in the video search rewind mode, and controls the tape drive train height with the upper and lower guides.
4.	Brake shifter Set the position of brake or the like in accordance with the modes such as stop and playback.	15.	Relay shifter lever Transmits the operation of the master cam to the brake shifter, and operates the reverse guide.
5.	Back tension lever Brakes the supply reel disk to a certain degree to prevent tape slackening during "half-loading", "loading" and "shifting from playback to video search rewind".	16.	Pinch roller lever ass'y Press-fits the tape to the capstan during tape running. The right protrusion switches the clutch of the cassette housing control assembly in "tape eject", and makes the mechanism eject the tape.
7.	Main supply brake lever Brakes the supply reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	17.	Master cam Turns clockwise during loading, and counterclockwise during unloading, and moves the shifter or the like in accordance with each mode.
9.	Main take-up brake lever Brakes the take-up reel disk to prevent tape slackening when the unit is stopped in fast forward or rewind mode.	18.	Loading motor A motive power which drives the mechanism. It transmits the power to the master cam and cassette housing control assembly via the belt.
10.	Half-loading lever Bring the tape in contact with the A/C head, putting it in half-loading state in the fast forward or rewind mode.	19.	Cam switch Rotates synchronously with the master cam, and detects the position of each mode by means of the internal switch.

FUNCTION OF MAJOR MECHANICAL PARTS (BOTTOM VIEW)



No.	Function	No.	Function
1.	Slow brake lever Gets in contact with the capstan D.D. motor linking to the master cam in the slow still mode, and brakes it to a certain degree.	7.	Reel sensor An element which sheds the light onto the reflection plate affixed to the bottom side of the reel disk, and detects the rotation of the reel disk through receiving the reflected light.
3.	Capstan D.D. motor A motive power which runs the tape. It transmits the power via the reel belt.	8.	Auxiliary fast forward brake lever Brakes the supply reel disk to a certain degree in the fast forward and rewind modes.
4.	Reel belt Transmits the power to run the tape to the reel pulley.	9.	Take-up loading gear Shifts the take-up pole base and guide roller via the loading relay gear, and applies the tape around the drum assembly, as well as transmits the power to the supply loading gear.
5.	Brake solenoid Adsorbs and holds the brake shifter in the fast forward and rewind modes, and releases it in the stop mode.	10.	Supply loading gear Shifts the supply pole base and guide roller via the take-up loading gear, and applies the tape around the drum assembly.
6.	Reel pulley Transmits the power of the capstan D.D. motor to the reel disk via the reel idler.	11.	Relay gear drive lever Transmits the movement of the master cam to the take-up loading gear via the loading relay gear.

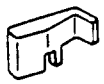
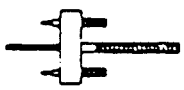
ADJUSTMENT, REPLACEMENT AND ASSEMBLY OF MECHANICAL UNITS

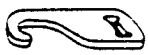
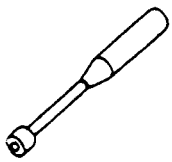
Here we will describe a relatively simple service work in the field, not referring to the more complicated repairs which would require the use of special equipment and tools (drum assembly replacement, for example).

We are sure that the easy-to-handle tools listed below would be more than handy for periodical maintenance to keep the machine in its original working condition.

TOOLS NECESSARY FOR ADJUSTING THE MECHANICAL UNITS

The following tools are required for proper service and satisfactory repair.

No.	Jig Item	Part No.	Code	Configuration	Remarks
1	Reel Disk Height Adjusting Jig	JiGRH0002	BR		These Jigs are used for checking and adjusting the reel disk height
2	Master Plane Jig	JiGMP0001	BY		
3	A/C Head Tilt Adjusting Jig	JiGACH-F18	BU		This Jig is used for setting the A/C head tilt.
4	Torque Gauge (90g)	JiGTG0090	CM		These Jigs are used for checking and adjusting the torque of take-up and supply reel disks.
	Torque Gauge (1.2 kg)	JiGTG1200	CN		
5	Gauge Head	JiGTH0006	AW		
6	Cassette Torque Meter	JiGVHT-063	CZ		This cassette torque meter is used for checking and adjusting the torque of take-up for measuring tape back tension.
7	Tension Gauge (300g)	JiGSG0300	BF		There are two gauges used for the tension measurements, 300 g and 2.0 kg.
	Tension Gauge (2.0kg)	JiGSG2000	BS		
8	Hex Wrench (0.9mm)	JiGHW0009	AE		These Jigs are used for loosening or tightening special hexagon type screws.
	Hex Wrench (1.2mm)	JiGHW0012	AE		
	Hex Wrench (1.5mm)	JiGHW0015	AE		
9	Alignment Tape (PAL)	VROCPSV	CK		This tape is especially used for electrical fine adjustment.
10	Drum Replacing Jig	JiGDT-0001	BG		This is used for replacement of the VCR's upper drum.

No.	Jig Item	Part No.	Code	Configuration	Remarks
11	Tension Gauge Adapter	JiGADP003	BK		This Jig is used with the tension gauge. Rotary transformer clearance adjusting Jig.
12	Special Bladed Screwdriver	JiGDRiVERH-4	AP		This Screwdriver is used for adjusting the guide roller height.
13	Tension Band and Plate Adjusting Jig	JiGDRiVER-6	BM		This Jig is used for adjusting the tension band and tension plate.
14	Torque Driver	JiGTD1200	CB		This is used to screw down resin-made parts: the specified torque is 5 kg.
15	Box Driver	JiGDRiVER110-7	AS		This Jig is used for height adjustment of the A/C head and X-position.
		JiGDRiVER110-4	AV		This Jig is used for height adjustment of the retaining guide.
16	Retaining Guide Height Adjusting Jig	JiGGH-F18	BU		This Jig is used for height adjustment of the retaining guide.
17	Reverse Guide Height Adjusting Jig	JiGRVGH-F18	BU		This Jig is used for height adjustment of the reverse guide.

MECHANICAL PARTS REQUIRING PERIODICAL INSPECTION

Use the following table as a guide to maintain the mechanical parts in good operating condition.

Parts \ Maintained	500 hrs.	1000 hrs.	1500 hrs.	2000 hrs.	Possible symptom encountered	Remarks
Guide roller ass'y	□	□	□	○	Lateral noises Head occasionally blocked	Abnormal rotation or significant vibration requires replacement.
Supply impedance roller	□	□	□	○		
Supply impedance roller (inner hole and shaft)		□		□		Clean with pure high quality isopropyl alcohol.
Supply impedance roller flange	□	□	□	□		Clean tape contact part with the specified cleaning liquid.
Retaining guide	□	□	□	□		
Slant pole	□	□	□	○		
Video head (upper drum ass'y)	□	○□	□	○□	Poor S/N ratio, no colour	Clean tape contact area with the specified cleaning liquid.
Full-erase head	□	□	□	○	Poor colour, beating	
A/C head	□	□	□	○	Sound too small or distorted	
Lower drum ass'y	□	□	□	○	Poor flatness of the envelope with alignment tape	
Capstan D.D. Motor	□	□	□	○	No tape running, uneven colour	
Pinch roller	□	□	□	○	No tape running, tape slack	Clean rubber and rubber contact area with the specified cleaning liquid.
Reel belt		□		○	No tape running, tape slack, no fast forward/rewind motion	
Loading belt		□		○	Cassette not loaded or unloaded	
Cassette loading belt		□		○		
Tension band ass'y				○	Lateral image swing	
Loading Motor				○	Cassette not loaded or unloaded	
Reel block*					See the chart below.	
* See the table below for servicing the reel block parts.						
Supply/Take-up reel disks		□△		△○	No tape running, tape slack	Clean with pure high quality isopropyl alcohol.
Video search brake lever				○		
Idler gear ass'y				○	No tape running	
Reel Pulley		□△		□○		
Main supply/take-up brake levers				○	Tape slack	

NOTE: ○: Part replacement.
□: Cleaning (For cleaning, use a lint-free cloth dampened with pure isopropyl alcohol).
△: Oil refilling (The indicated point should be lubricated with high quality spindle oil every 1000 hrs).

If the reading is out of the specified value, clean or replace the part.

REMOVAL AND REASSEMBLY OF CASSETTE HOUSING CONTROL ASSEMBLY

- **Removal**

1. Set the cassette ejected condition in the cassette eject mode.
2. Unplug the recorder from the main source.
3. Follow the procedures below in the specified order.
   a) Remove the cassette loading belt ①.
   b) Disconnect the FFC (Full Flat Cable) ②.
   c) Remove the cassette housing installation screws ③.
   d) Slide and pull out the cassette housing control assembly ④ upward.

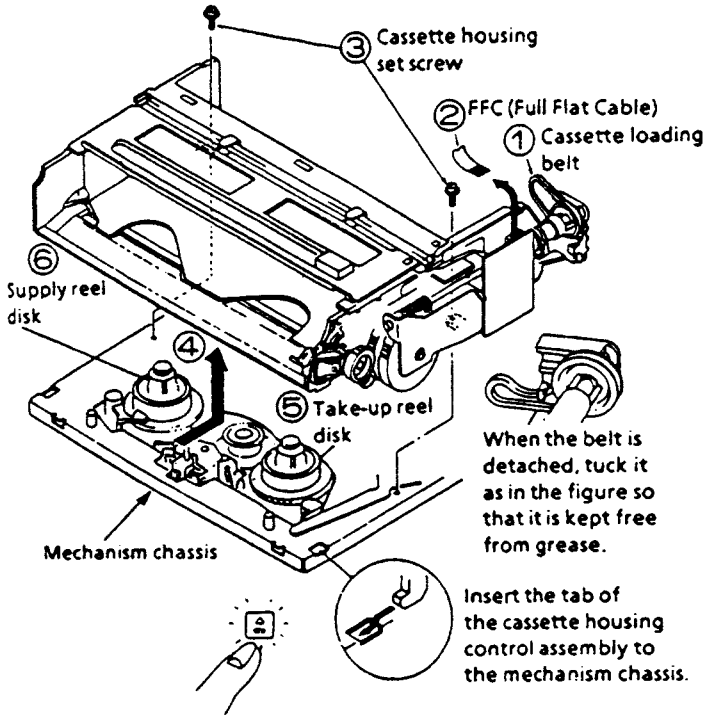

③ Cassette housing set screw
② FFC (Full Flat Cable)
① Cassette loading belt
⑥ Supply reel disk
④
⑤ Take-up reel disk
When the belt is detached, tuck it as in the figure so that it is kept free from grease.
Mechanism chassis
Insert the tab of the cassette housing control assembly to the mechanism chassis.

Figure 1-1.

- **Reassembly**

1. Before installation of the cassette housing control assembly, place the unit in the stop mode with the power on, then unplug the power cord. (The main body is placed in the eject mode.)
2. Follow the procedures for removal in the reverse order.

Notes:

1. Be sure to unplug the power cord in removal and reassembly.
2. Keep the cassette loading belt free from grease. In case of its adhesion, clean the belt.
3. In using a magnet screw driver, be sure to keep it away from the A/C head, FE (Full Erase) head, or the drum.
4. In removal and reassembly, take care not to hit the cassette housing control assembly or tools against the guide pin, drum, or the like thereabout.
5. Place the unit in the eject mode in removal or reassembly of the cassette housing control assembly.
6. Load the cassette once onto the cassette housing control assembly after reassembly. (If the cassette housing control assembly normally operates after this, the phases of mechanism and the cassette controller are accurately adjusted after ejection.)

MECHANICAL OPERATION CHECK WITHOUT CASSETTE

When power is on, the general operations of the mechanism can be checked without a cassette. Note the following points.

1. Check video search rewind and rewind, rotating the take-up reel disk ⑤ by hand (in either normal or reverse direction). If it is not rotated, the reel sensor works to shift the mechanism to the eject mode.
2. When the stop button is pressed, the mechanism does not stop at a normal stop position. It shifts to the eject mode and stops.
3. When the stop button is pressed in the playback, video search rewind, and video search forward modes, the supply reel disk ⑥ keeps on rotating for several seconds for elimination of tape slack in the course of shifting to the eject mode. In such a case, rotate the take-up reel disk ⑤ somewhat by hand, and the supply reel disk ⑥ stops, which can reduce the working time.

REPLACEMENT OF WORM WHEEL ASSEMBLY

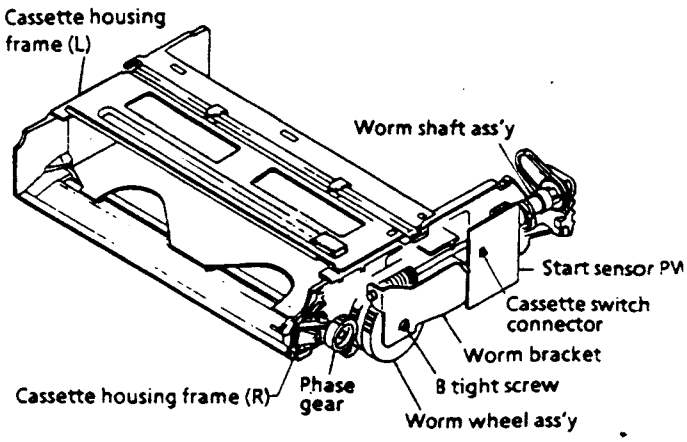


Figure 1-2.

- **Removal**

1. Unsolder the cassette switch connectors (No.16, 17) from the start sensor PWB.

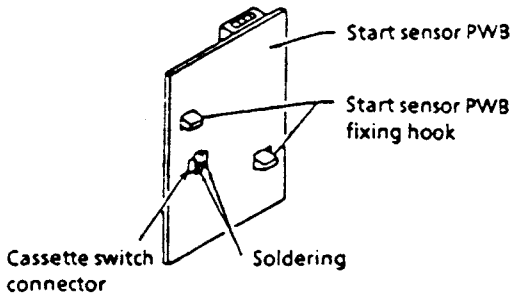


Figure 1-3.

2. Lift the start sensor PWB pressing the two start sensor PWB fixing hooks inward.

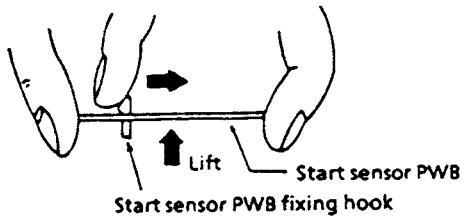


Figure 1-4.

3. Unscrew one B tight screw to detach the worm bracket.
Note:
The worm shaft bearing can easily come out of position. So be careful not to lose it.

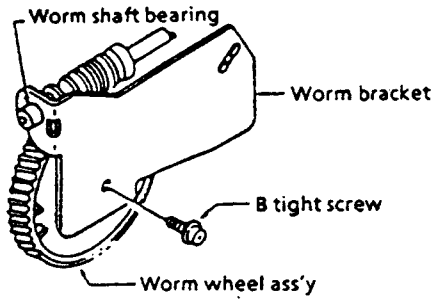


Figure 1-5.

4. Remove the worm shaft assembly, pulley, and cassette loading belt all from the cassette housing frame (R).

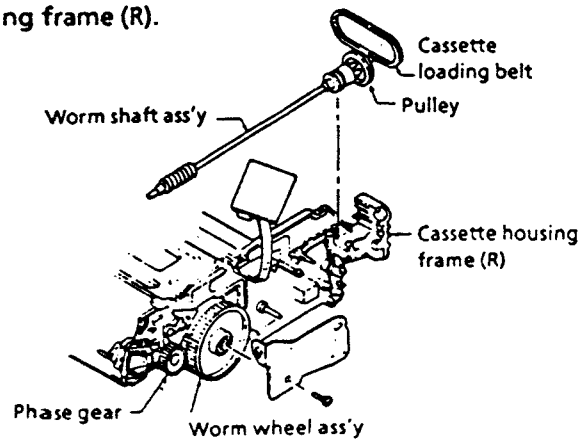


Figure 1-6.

5. Place the slider pin just above the worm wheel assembly (Figure 1-7). (The retainer of the slider is locked at two positions. So unlock it as in the Figure 1-8.)
6. Pull out the worm wheel assembly toward you pressing the switch lever upward. (Figure 1-7)

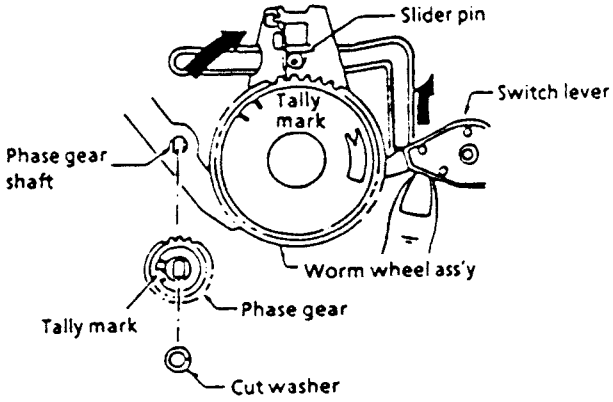


Figure 1-7.

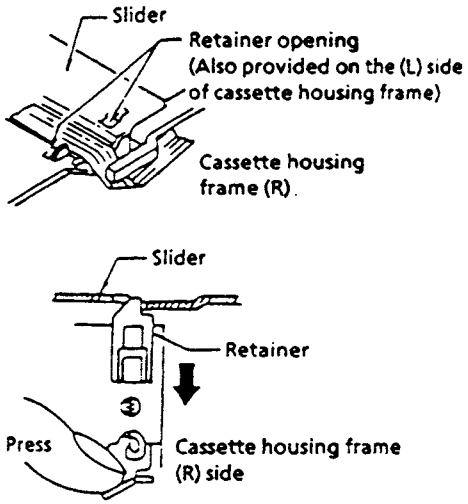


Figure 1-8.

- **Reassembly**

1. Turn the phase gear clockwise until the slider comes to a halt in the cassette insertion direction. (See the Figure 1-9.)
2. Insert the set up worm wheel gear assembly into the cassette housing frame (R), matching the mark on the phase gear with the mark on the worm wheel gear. Detach the cut washer on the phase gear assembly and the phase gear for easier installation of worm wheel assembly.
Note:
Make sure that the slider pin is in the groove of the drive gear arm.

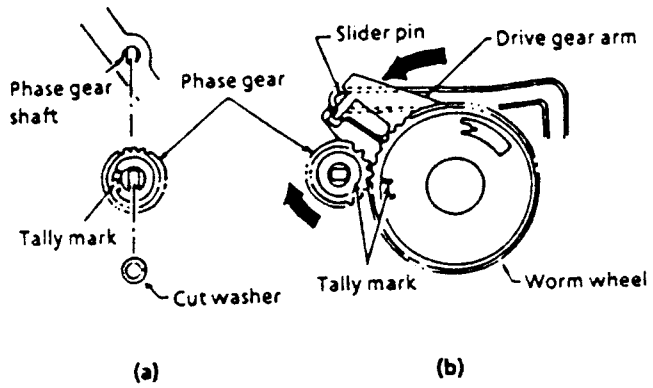


Figure 1-9.

3. Install the pulley and the cassette loading belt on the worm shaft assembly. Couple the clutch to the clutch lever. And mount them together in the cassette housing frame (R).
   Note:
   Keep in mind that the clutch switching lever should be in the correct position. The mechanism might malfunction if the lever is slightly out of position. (See page 12.)

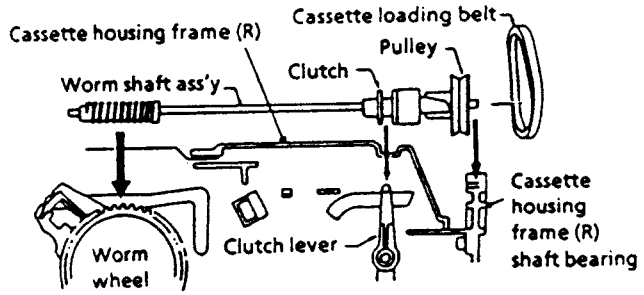


Figure 1-10.

4. Attach the worm bracket to the worm shaft assembly. Place them onto the boss on the cassette housing frame (R).
   Note:
   Insert ① before screwing into ② and ③.

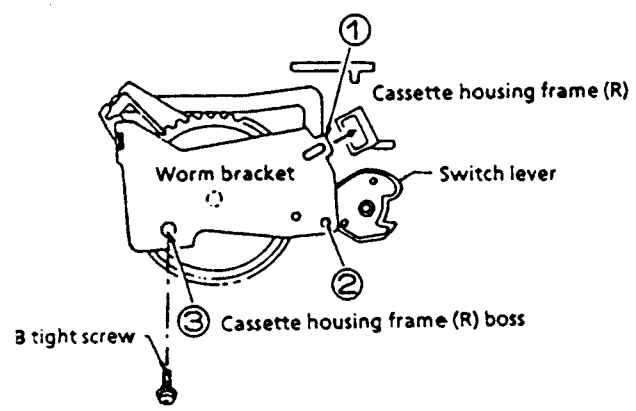
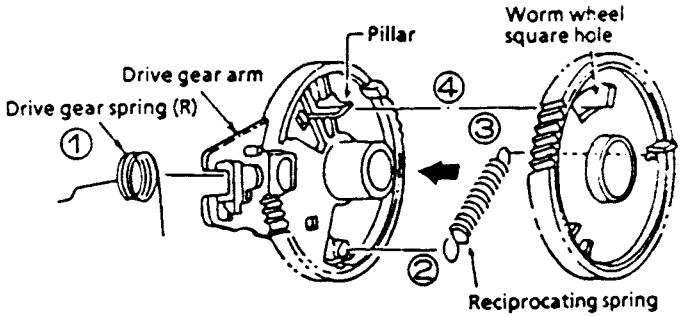


Figure 1-11.

5. Tighten one B tight screw.
   Note:
   Do not overtighten the B tight screw (no more than 5.0 ± 0.5 kg.cm), because the lower threads of the screw hole at the resin-made boss can be broken.
6. Place the start sensor PWB on the cassette housing frame (R).
   Note:
   Check that the switch connectors (No.16, 17) are in the cassette switch mounting hole.
7. Finally resolder the cassette switch connector to the start sensor PWB.

REASSEMBLY OF DRIVE GEAR



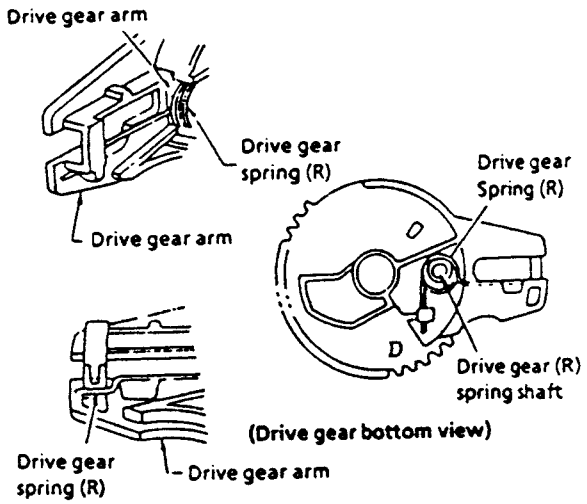


Figure 1-12.

1. Pass the tip of the drive gear spring (R) ① through the square hole of the drive gear (R) to hook the spring in position.
2. Hook one end ② of the reciprocating spring to the catch of the drive gear (R).
3. Hook the other end ③ of the reciprocating spring to the catch of the worm wheel.
4. Insert the pillar ④ of the drive gear (R) into the square hole of the worm wheel. Turn the worm wheel somewhat counterclockwise for insertion of the worm wheel to the drive gear (R), because the reciprocating spring is at work.

REPLACEMENT OF CASSETTE LOADING BELT

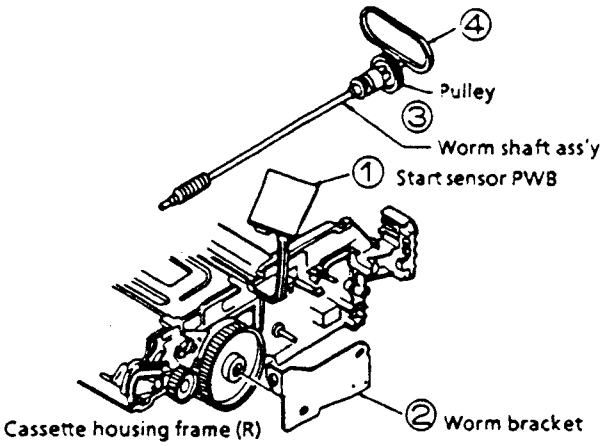


Figure 1-13.

1. Remove the start sensor PWB ① and worm bracket ② from the cassette housing frame (R).
2. Remove the worm shaft assembly ③.
3. Replace the cassette loading belt ④ with a new one.

Notes:

1. Do not overtighten the B tight screw which holds the worm bracket in position. The specified torque is 5.0 ± 0.5 kg.cm.
2. Make sure that the cassette loading belt is free from grease. If stained with grease, clean the belt with the cleaning liquid.
3. Perform checking of the clutch switch lever for proper action.

CHECKING THE CLUTCH SWITCH LEVER

- **Checking**

  Place the mechanism in the cassette eject mode when removing and attaching the cassette housing from and to the mechanism chassis.

  Make sure enough that each part in the cassette housing such as the clutch switch lever is in position. If not, it causes malfunction.

  Note:

  Figure 1-14 shows the position of each part in the cassette eject mode.

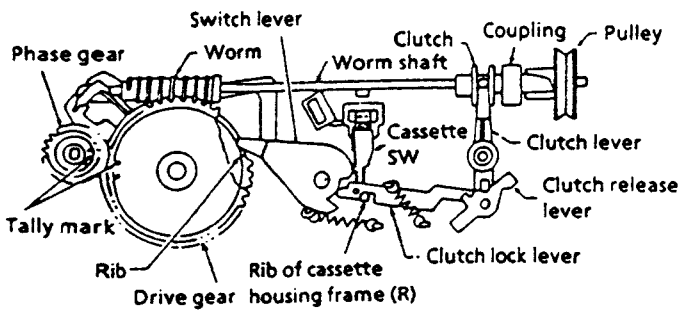
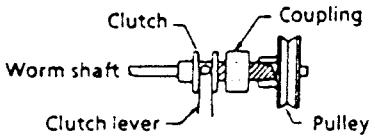


Figure 1-14.

1. First make sure that the tip of the switch lever is held at the rib of the drive gear (R).
2. Check that the rib of the cassette housing frame (R) and the concavity of the clutch lock lever are engaged.
3. Finally be sure that the relationship between the clutch lever and the clutch, as well as between the clutch and the pulley, are correct as in the Figure 1-15.



Check that the clutch is engaged with the pulley through the coupling.

Figure 1-15.

- **Resetting**

  Take the following steps to reset the clutch if it is unlocked or if the switch lever and the clutch lock lever are unlocked.

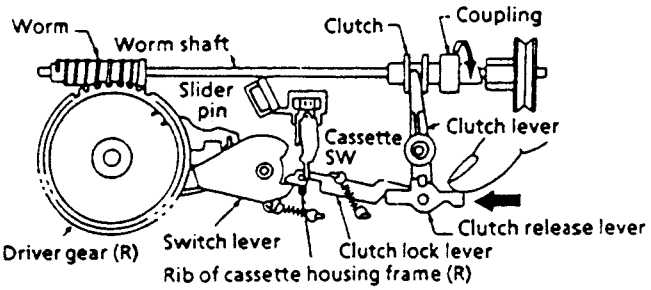


Figure 1-16.

1. Shift the slider by turning the coupling in the arrow direction (clockwise) until the slider pin is at the bottom of the slider groove as shown in the Figure 1-16. (The loading mode)

   Note:

   Note that the slider is equipped with a lock mechanism. Unlock the locks on cassette housing frames (L) and (R) side before shifting the slider.
2. When the position is set as shown in the Figure 1-16, push the clutch release lever in the direction of the arrow by hand until the clutch lock lever becomes tightly locked by the rib of the cassette housing frame (R).
3. Then turn the coupling counterclockwise until the slider reaches the cassette insertion opening and the reciprocating spring is activated.

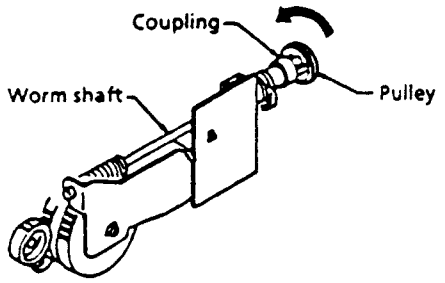
   Note:

   There is no need to unlock the slider when shifting the slider to the cassette insertion opening. Just keep shifting the slider.

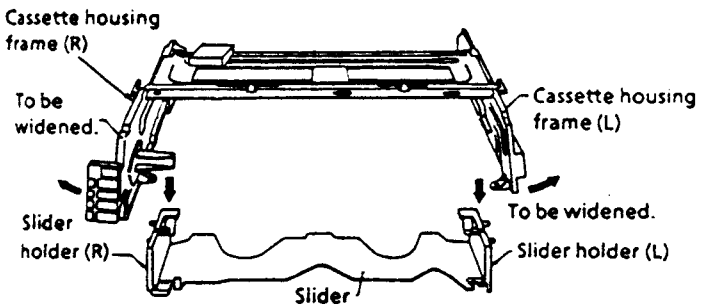
REPLACEMENT OF LOCK RELEASE LEVER

- **Removal**

1. Place the slider in the cassette down position. (Turn the coupling on the worm shaft clockwise until the slider is in the cassette down position.)
   Note:
   Before shifting, unlock the slider.
2. Slightly widen the cassette housing frames (R) and (L) to unhook the slider holders (R) and (L) of the slider assembly off the grooves of the cassette housing frames.



(a)



(b)

Figure 1-17.

3. Lift the slider holder (R) upward about 2mm off the slider by pressing two catches with a thin tip screw driver. Take care not to damage the catches.

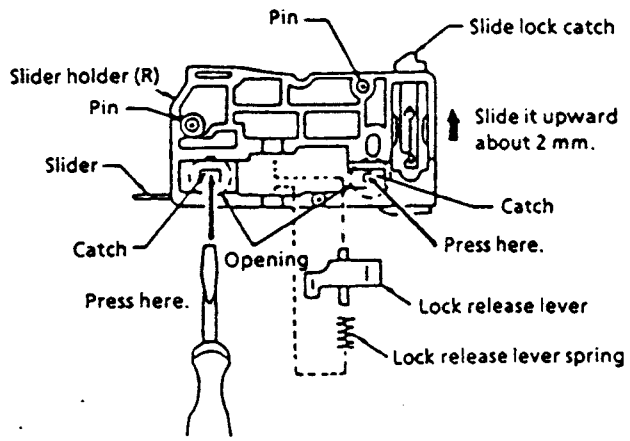


Figure 1-18.

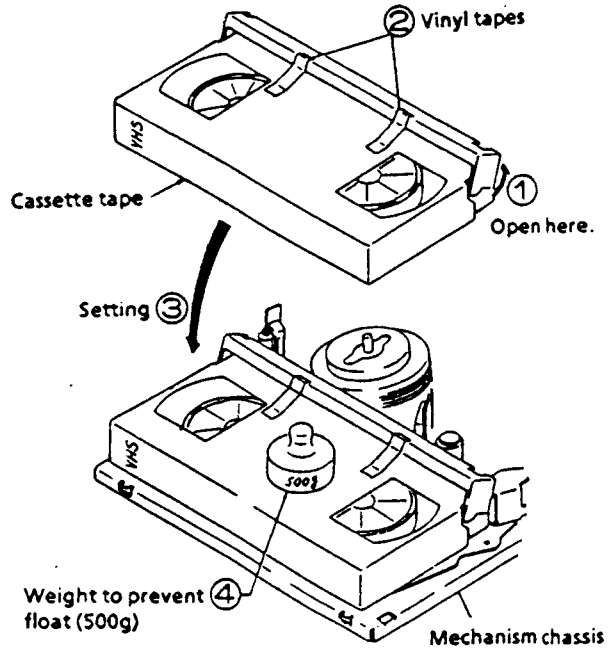
4. Remove the lock release lever from the slider holder (R)

- **Reassembly**

1. Follow the steps for removal in the reverse order. (See Figures 1-17 and 1-18.)
2. Attach the lock release lever to the slider holder (R).
3. Slide the slider holder (R) downward so that the two catches of the slider holder (R) fit the openings of the slider.
4. Slightly widen the cassette housing frames, and set the pins of slider holders (R) and (L) into the grooves of the cassette housing frames.
   Note:
   Check if the pins of the slider holders (R) and (L) fit the grooves of the cassette housing frames, and if the drive gear arm is sufficiently engaged with the slider holders.
5. Turn the coupling counterclockwise until the slider is at the cassette insertion opening.

TO RUN A TAPE WITHOUT THE CASSETTE HOUSING CONTROL ASSEMBLY

1. Plug in the power cord.
2. Turn on the power switch.
3. Open the lid ① of a cassette tape by hand.
4. Hold the lid with two pieces of vinyl tape ②.
5. Set the cassette tape in the mechanism chassis.
6. Weight the cassette tape with a weight ④ to prevent floating.
7. Perform running test.



Note:
The weight should not be more than 500 g.

Figure 1-19.

REPLACEMENT AND HEIGHT CHECKING AND ADJUSTMENT OF REEL DISKS

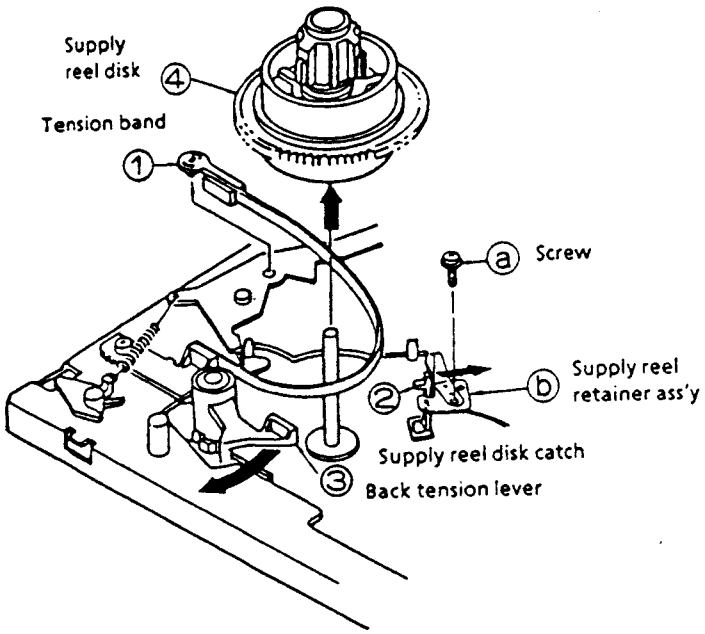
1. Remove the cassette housing control assembly.
2. Set the mechanism in the playback mode with no cassette tape in place. Unplug the power cord.
3. Set the idler gear in the center (neutral).

- Removal (Supply reel disk)

1. Remove the tension band ①. (Take care not to deform it.)
2. Unscrew the screw ⓐ and remove the supply reel retainer assembly ⓑ.
3. Release the supply reel disk catch ② and back tension lever ③.
4. Pull the supply reel disk ④ upward.

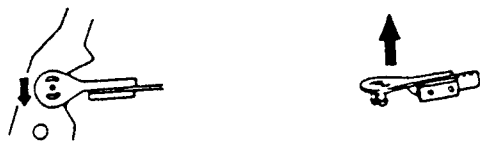
Notes:

1. Take care not to deform the tension band.
2. Check and adjust the tension pole position. (See page 19.)
3. Be careful not to damage the gear and the idler gear on the supply reel disk.
4. Press the tension band in the direction of the arrow for removal (See Figure 1-20(b)).



(a)

Note:
When the tension band is pressed in the direction of the arrow for removal, the catch is hard to be deformed.



(b)

Figure 1-20.

- Removal (Take-up reel disk)

1. Unscrew the screw ⓒ and remove the take-up reel retainer.
2. Release the take-up reel disk catch ①.
3. Pull the take-up reel disk ② upward.

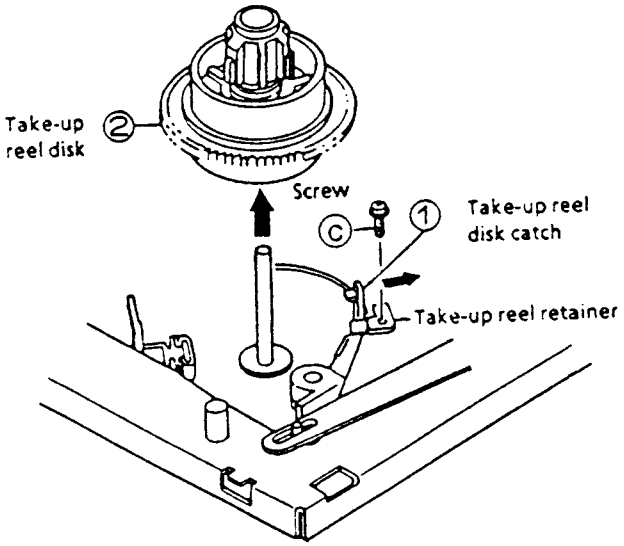


Figure 1-21.

- Reassembly (Supply reel disk)

1. Clean the reel disk shaft ① and apply oil to it.
2. Release the supply reel disk catch ② and back tension lever ③.
3. Install a new supply reel disk ④ onto the shaft.
4. Replace the tension band ⑤ around the supply reel disk, and insert it to the hole of the tension arm.
5. Replace the supply reel retainer assembly ⓑ in place, and tighten up the screw ⓐ.

Notes:

1. Take enough care not to deform the tension band during installation of the supply reel disk.
2. Be careful not to damage the supply reel disk gear, back tension lever, supply reel disk catch, or the like with tools.

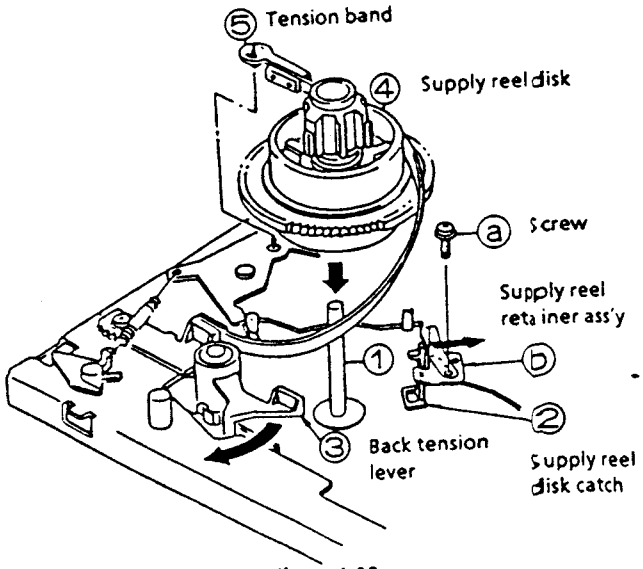


Figure 1-22.

• **Reassembly (Take-up reel disk)**

1. Clean the reel disk shaft ① and apply oil to it.
2. Release the take-up reel catch ② and video search brake lever ③.
3. Install a new take-up reel disk ④ onto the shaft.
4. Replace the take-up reel retainer ⑤ in position and tighten up the screw ⓒ.

Note:
Take care not to damage the video search brake lever.

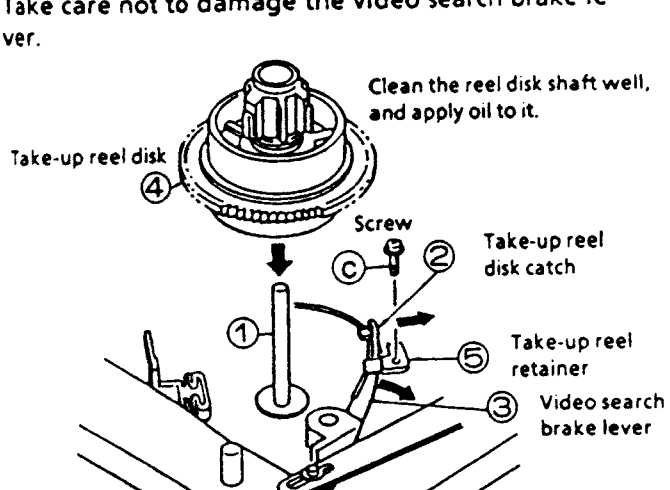


Figure 1-23.

* After reassembly, check the video search rewind back tension (see page 18), and check the brake torque (see page 20).

• **Height checking and adjustment**

Note:
Place the master plane onto the mechanism unit, taking care not to hit the drum (see Figure 1-24).

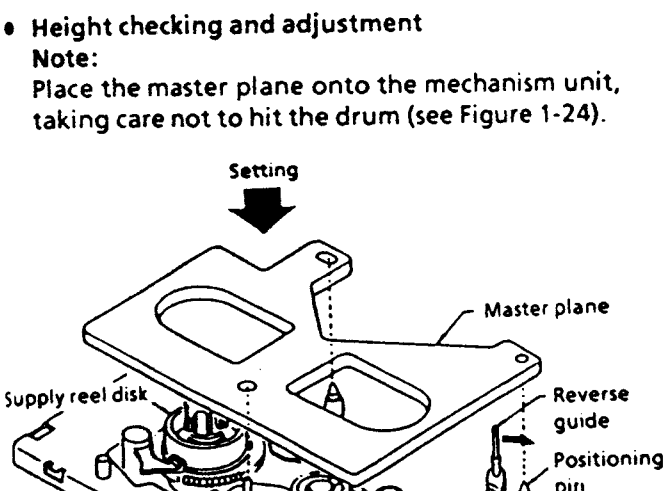


Figure 1-24.

1. For height adjustment, press the reel disk with a finger, and turn it right and left with a screwdriver (see Figure 1-26 (a)).

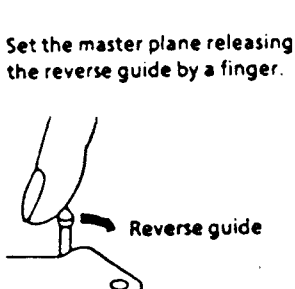
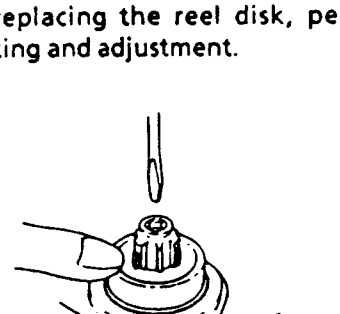


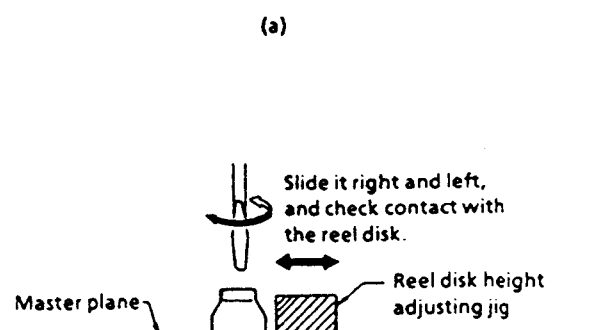
Figure 1-25.

2. Check that the reel disk is lower than part A but higher than part B. If the height is not correct, adjust the height adjusting screw (see Figure 1-26 (b)).

Note:
Whenever replacing the reel disk, perform the height checking and adjustment.



(a)



(b)

Figure 1-26.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN FAST FORWARD MODE

- Remove the cassette housing control assembly.
- Setting

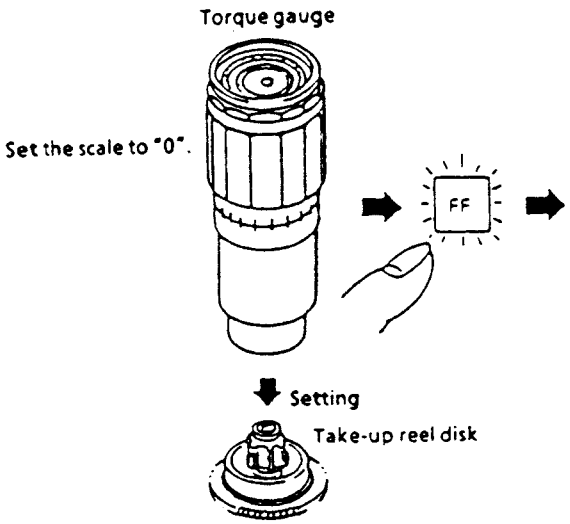


Figure 1-27.

- Checking

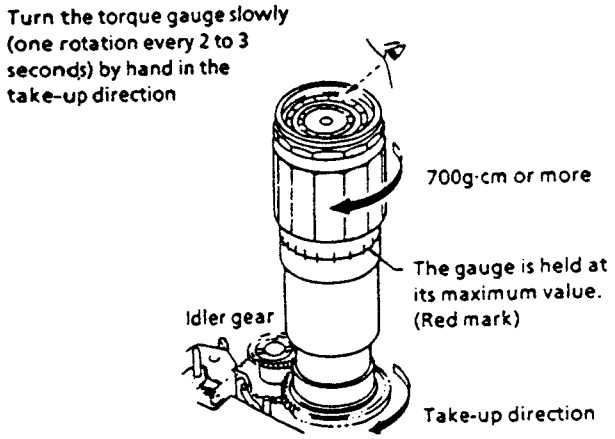

Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction
700g·cm or more
The gauge is held at its maximum value. (Red mark)
Idler gear
Take-up direction

Figure 1-28.

- Adjustment

1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes:

1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN REWIND MODE

- Remove the cassette housing control assembly.
- Setting

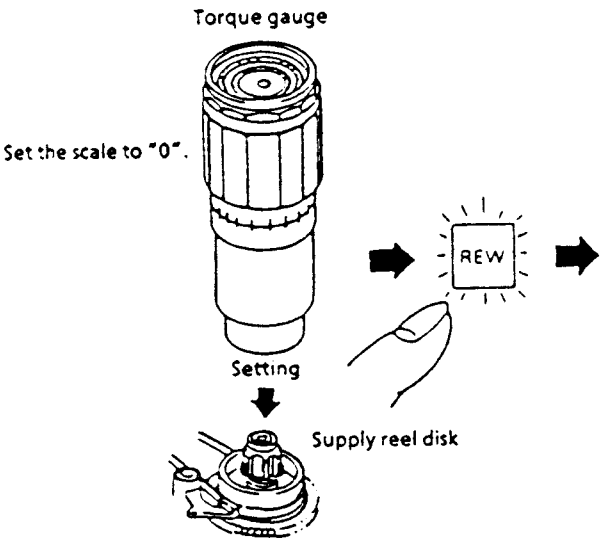


Figure 1-29.

- Checking

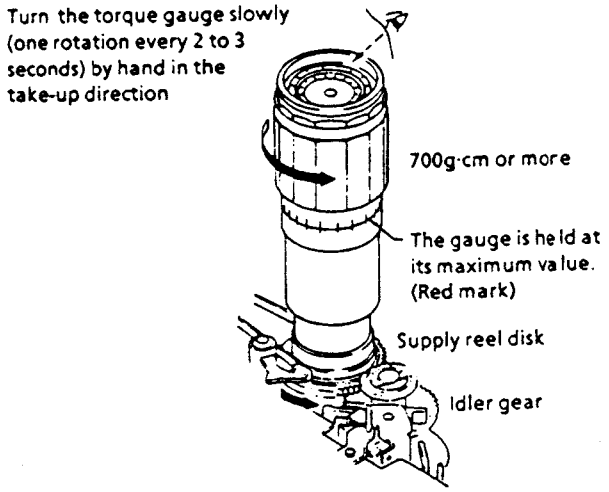

Turn the torque gauge slowly (one rotation every 2 to 3 seconds) by hand in the take-up direction
700g·cm or more
The gauge is held at its maximum value. (Red mark)
Supply reel disk
Idler gear

Figure 1-30.

- Adjustment

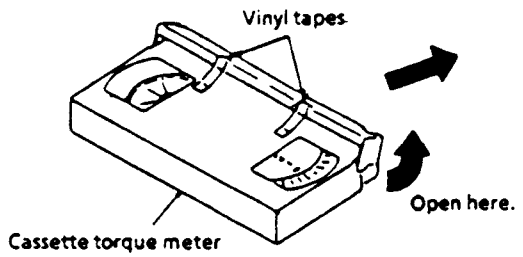
1. If the take-up torque is outside the range, clean the capstan D.D. motor pulley, reel belt and reel pulley with cleaning liquid, then recheck the torque.
2. If the take-up torque is still out of range, replace the reel belt.

Notes:

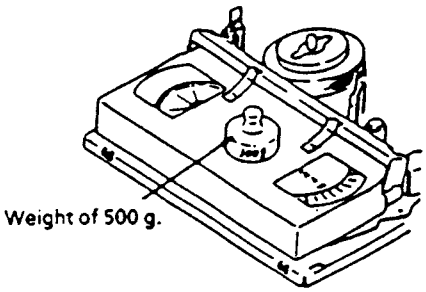
1. Hold down the torque gauge so that it may not fly off.
2. When checking the take-up torque, do not keep the reel disk locked for a longer time.

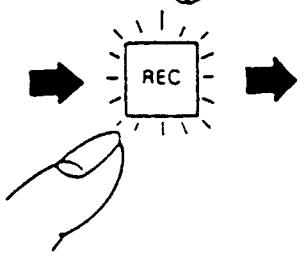
CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN PLAYBACK MODE

1. Remove the cassette housing control assembly.
2. Open the lid of the cassette torque meter, and hold it with two pieces of vinyl tapes.



Load a cassette torque meter into the unit.





Set value SP 95 ± 30g·cm

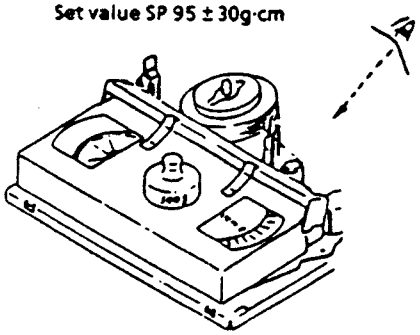


Figure 1-31.

- **Checking**

1. Check that the torque is in the range of 95 ± 30 g·cm.
2. The torque fluctuates due to the rotational deviation of the reel drive unit. Use the center of the fluctuation as the value.
3. Place the unit in the SP record mode, and check that the take-up torque is within the range.

- **Adjustment**

If the take-up torque in the playback mode is outside the range, replace the take-up reel disk.

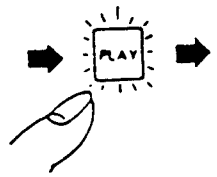
Note:

Stabilize the cassette torque meter to prevent floating.

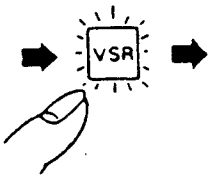
CHECKING AND ADJUSTMENT OF TAKE-UP TORQUE IN VIDEO SEARCH REWIND MODE

- **Remove the cassette housing control assembly.**

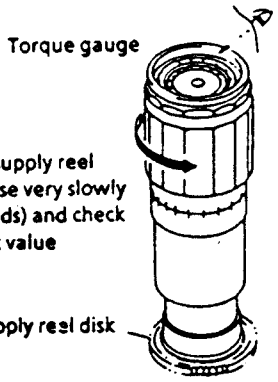
- **Checking**



Push the play button to place the unit in the playback mode.



Push the video search rewind button to place the unit in the video search rewind mode.



Place the torque gauge on the supply reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value 170 ± 40 g·cm

Figure 1-32.

Note:

Set the torque gauge securely on the supply reel disk. If it is not secure, the measurement will be incorrect.

- **Adjustment**

If the take-up torque in video search rewind mode is outside the range, replace the supply reel disk.

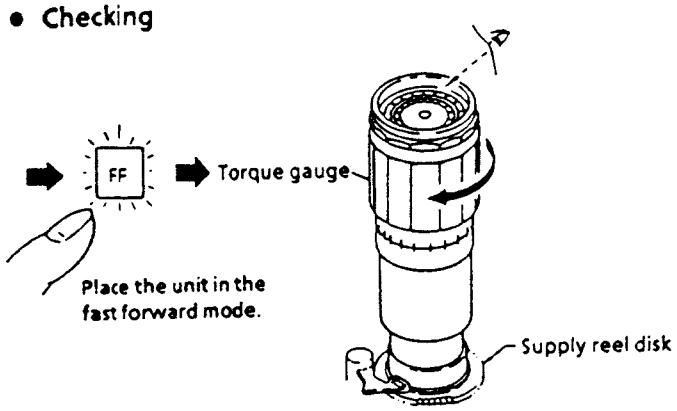
Note:

The torque fluctuates due to the rotational deviation of the supply reel disk. Use the center of the fluctuation at the value.

CHECKING THE FAST FORWARD BACK TENSION

- Remove the cassette housing control assembly.

- Checking



Place the torque gauge on the supply reel disk, and turn it clockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 15 ± 5 g·cm

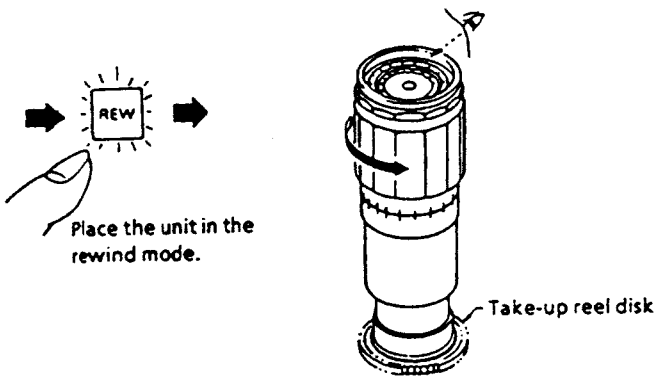
Figure 1-33.

Note:
Set the torque gauge securely on the supply reel disk. If the torque gauge is not securely set on the reel disk, measurement will be incorrect.

CHECKING THE REWIND BACK TENSION

- Remove the cassette housing control assembly.

- Checking



Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within 15 ± 5 g·cm.

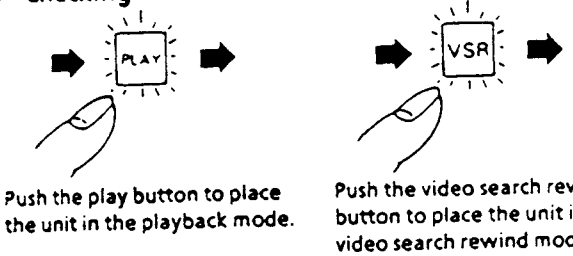
Figure 1-34.

Note:
Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.

CHECKING THE VIDEO SEARCH REWIND BACK TENSION

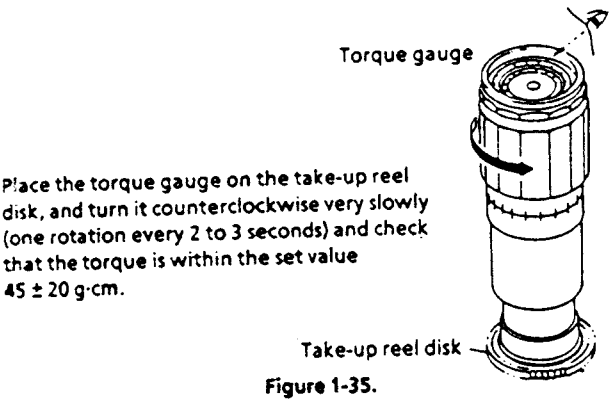
- Remove the cassette housing control assembly.

- Checking



Push the play button to place the unit in the playback mode.

Push the video search rewind button to place the unit in the video search rewind mode.



Place the torque gauge on the take-up reel disk, and turn it counterclockwise very slowly (one rotation every 2 to 3 seconds) and check that the torque is within the set value 45 ± 20 g·cm.

Figure 1-35.

Note:
Set the torque gauge securely on the take-up reel disk. If it is not secure, the measurement will be incorrect.

CHECKING THE PINCH ROLLER PRESSURE

- Remove the cassette housing control assembly.

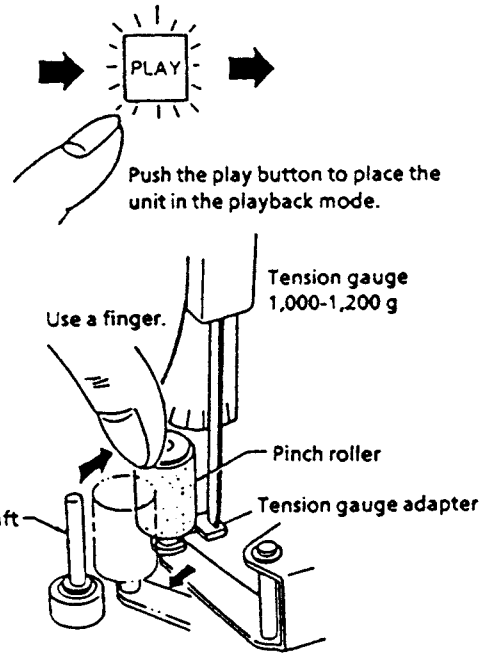


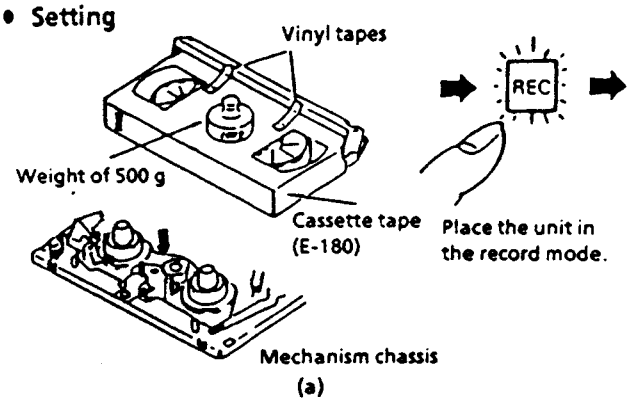
Figure 1-36.

1. Detach the pinch roller from the capstan shaft.
2. Set the tension gauge by hooking the tension gauge adapter onto the pinch roller shaft.
3. Gradually release the pressure to allow the pinch roller to touch the capstan shaft. When the pinch roller just touches the capstan shaft, read the indication on the gauge.
4. Check that the reading of the tension gauge is in the range of 1000 to 1200 g.

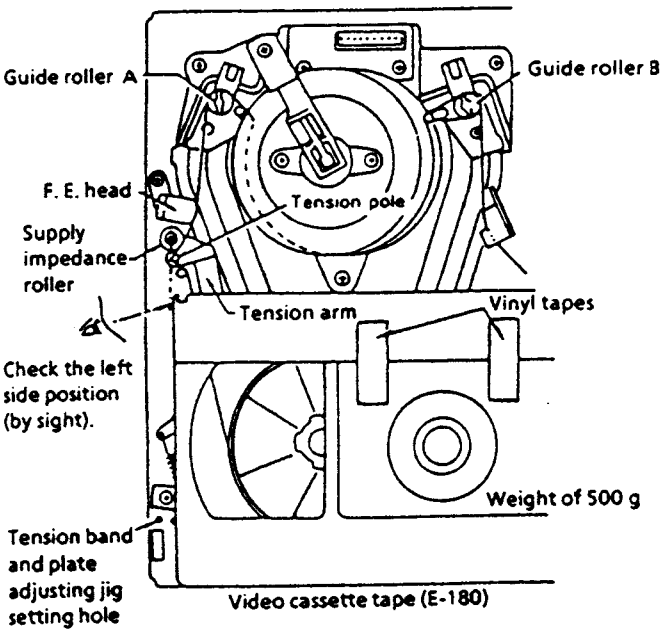
CHECKING AND ADJUSTMENT OF TENSION POLE POSITION

- **Remove the cassette housing control assembly.**

- **Setting**



(a)



(b)

Figure 1-37.

- **Checking**

1. The guide rollers (A, B) operate to bring the tape outside the cassette tape and simultaneously the tension pole moves to the left, loading the tape. At that time (loading completed), check the position of the tension pole.
2. At the beginning of the tape (E-180), check that the tension pole's left side is aligned with the supply impedance roller's center by sight.
3. Check that the end of the tape is neither curled against the flange of the supply impedance roller nor over it.
4. During the video search rewind mode with no cassette tape in place, check that the supply reel disk is free from the tension band.

- **Position adjustment (record mode)**

When the tension pole is at the right of the supply impedance roller's center:

Untighten the tightening screw, and shift the tension band adjustment bracket in the direction of the arrow using a tension band and plate adjusting Jig until it is in the set value range (center). Then secure it with the tightening screw.

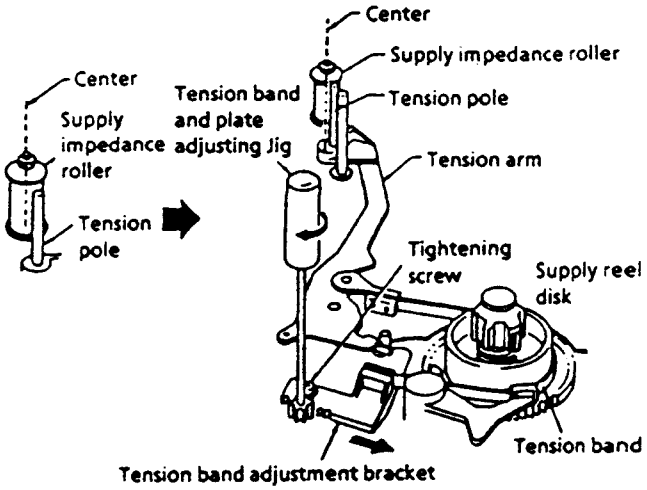


Figure 1-38.

- **Position adjustment (record mode)**

When the tension pole is at the left of the supply impedance roller's center:

Untighten the tightening screw, and shift the tension band adjustment bracket in the direction of the arrow using a tension band and plate adjusting Jig until it is in the set value range (center). Then secure it with the tightening screw.

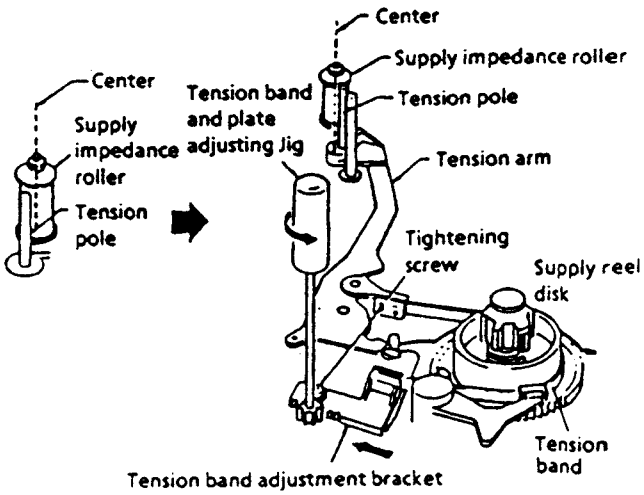


Figure 1-39.

CHECKING AND ADJUSTMENT OF RECORD / PLAYBACK BACK TENSION

- Remove the cassette housing control assembly.

- Checking

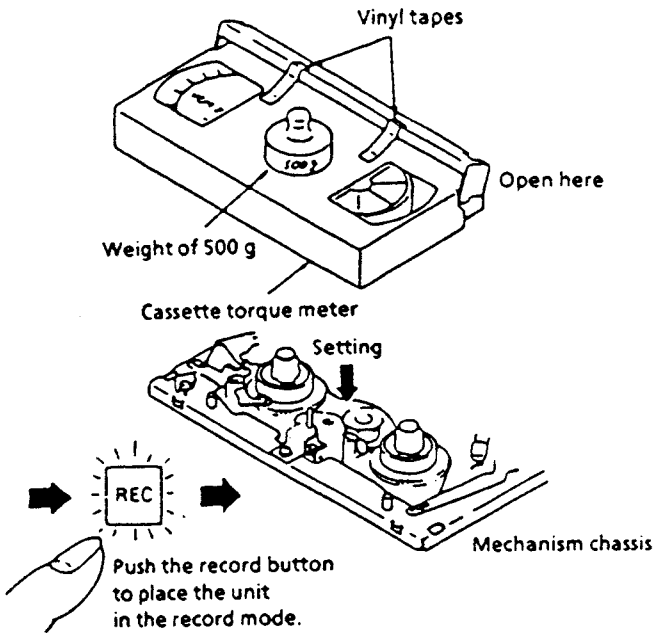


Figure 1-40.

1. Put a cassette torque meter into the unit.
2. Push the record button to place the unit in the record mode.
3. Check that the back tension indicated by the gauge is within the set range 31 to 36 g·cm.

Notes:

1. Make sure that the video cassette tape is over the retaining guide.
2. Make sure that the tape is not slack nor damaged at either end.

- Adjustment

1. If the reading of the cassette torque meter is less than specified, move the tip of the tension spring hook plate toward the hole A.
2. If the reading of the cassette torque meter is more than specified, move the tip of the tension spring hook plate toward the hole B.

   Note:

   Put a thin screw driver (–) in the shaft hole, lean it toward you, and turn it for easier shift of the tension spring hook plate in the direction of A or B.

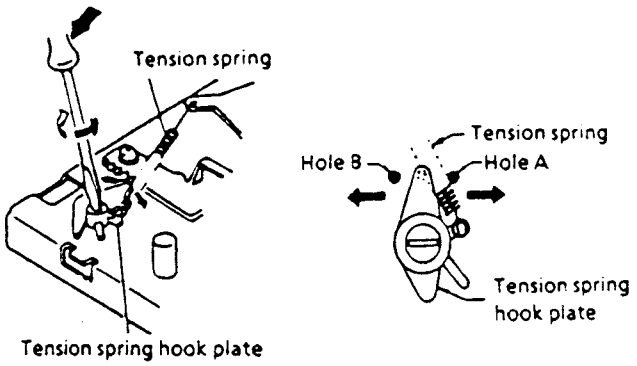


Figure 1-41.

CHECKING THE BRAKE TORQUE

- Checking the brake torque at the supply side

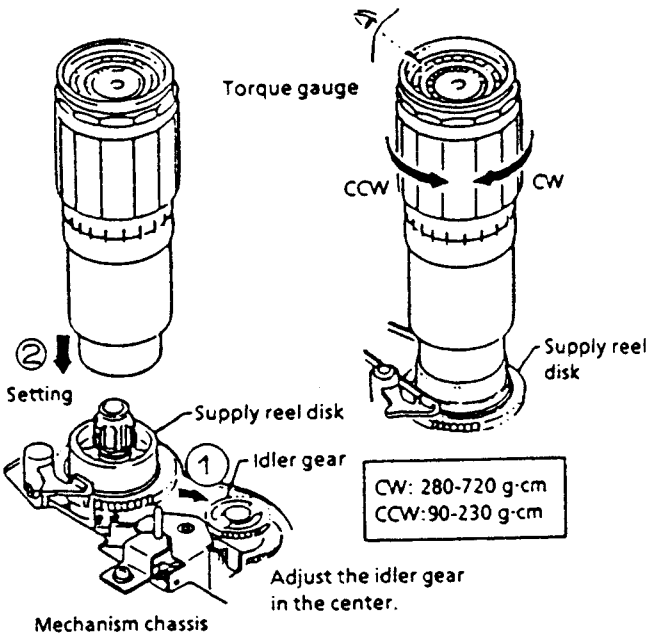


Figure 1-42.

1. Remove the cassette housing control assembly.
2. Place the mechanism in the stop mode by unplugging the power cord in the fast forward or rewind mode.
3. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the supply brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CW direction = 280 to 720 g·cm, CCW direction = 90 to 230 g·cm, and that the brake torque in the CW direction is at least twice as high as that in the CCW direction.

• Checking the brake torque at the take-up side

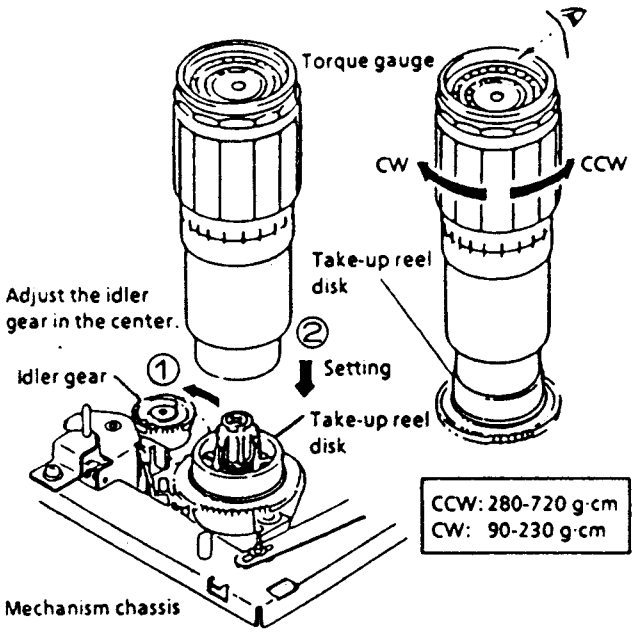


Figure 1-43.

1. Remove the cassette housing control assembly.
2. Slowly rotate the torque gauge in the clockwise (CW) direction and counterclockwise (CCW) direction of the take-up brake so that the reel disk and the indicator of the torque gauge rotate at an equal rate. Check that the values are within the range of CCW direction = 280 to 720 g · cm, CW direction = 90 to 230 g·cm, and that the brake torque in the CCW direction is at least twice as high as that in the CW direction.

• Adjustment of the brake torque at the supply side and the take-up side

1. If the supply or take-up brake torque is outside the range, clean the supply or take-up reel disk break lever felt, then recheck the torque.
2. If the supply or take-up brake torque is still outside the range, replace the main brake or the main brake spring.

REPLACEMENT OF MAIN BRAKE

1. Remove the reel belt and the reel block FFC (Full Flat Cable).
2. Remove the cut washer ① off the brake shifter.
3. Unscrew the four screws ② and then the take-up reel retainer.
4. Remove the reel block assembly Ⓐ downward.
5. Remove the cut washer ③ first and then the reel pulley.
6. Unscrew the two screws ④ and detach the idler assembly.
7. Unhook the back tension lever spring ⑤ and remove the back tension lever ⑥. (Undo the hook under the reel chassis.)
8. Open the shifter latch ⑦ and remove the brake shifter assembly ⑧.
9. Release the reel disk catches ⑬ and then remove the left and right reel disk assemblies ⑨ and ⑩.
10. Finally remove the main brake levers ⑪ and the main brake spring ⑫.

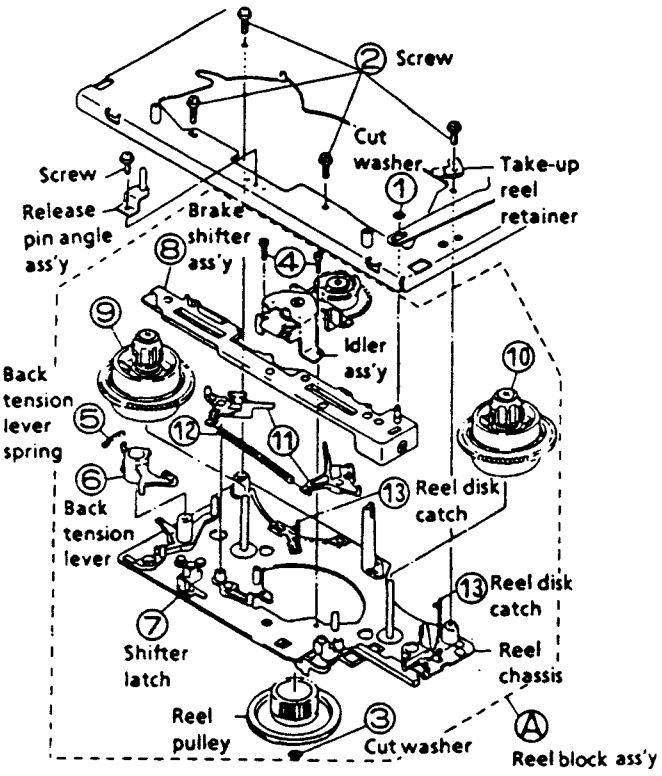


Figure 1-44.

Note:
When the main brake is replaced, perform the height checking and adjustment (see page 15), and the brake torque checking (see page 20).

REPLACEMENT OF A/C (Audio/Control) HEAD

1. Remove the cassette housing control assembly.
2. Place the unit in the unloading mode, and unplug the power cord.

- **Removal**

1. Loosen the tilt adjusting screw ①.
2. Remove the azimuth adjusting screw ②.
3. Remove the A/C head screw ③.
4. Unsolder the A/C head PWB soldered to the A/C head assembly.

Notes:

1. After replacement, be sure to perform the adjustment of the tape drive train (see page 24). Under any circumstances, avoid touching the head. Clean the head, if touched with your finger, with alcohol.
2. Take care that the azimuth spring does not fly off when removing the A/C head screw.

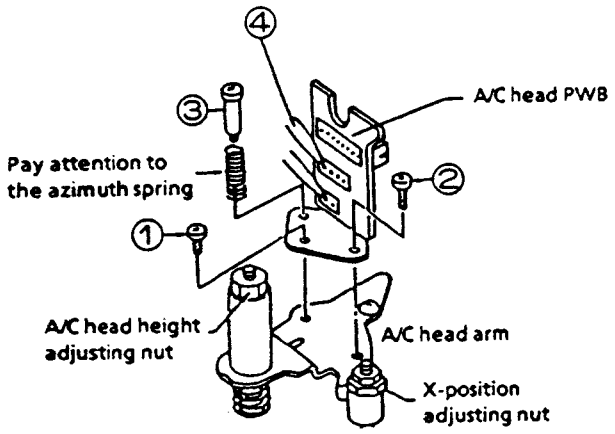


Figure 1-45.

- **Replacement**

1. Solder the removed A/C head PWB onto a new A/C head assembly.
2. The A/C head assembly is attached so that the A/C head arm and A/C head plate are roughly parallel to each other.

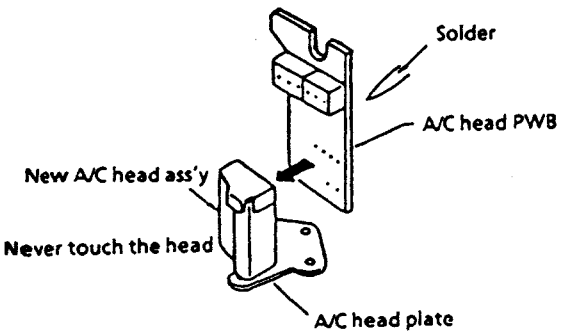


Figure 1-46.

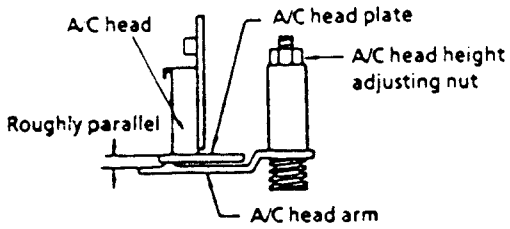
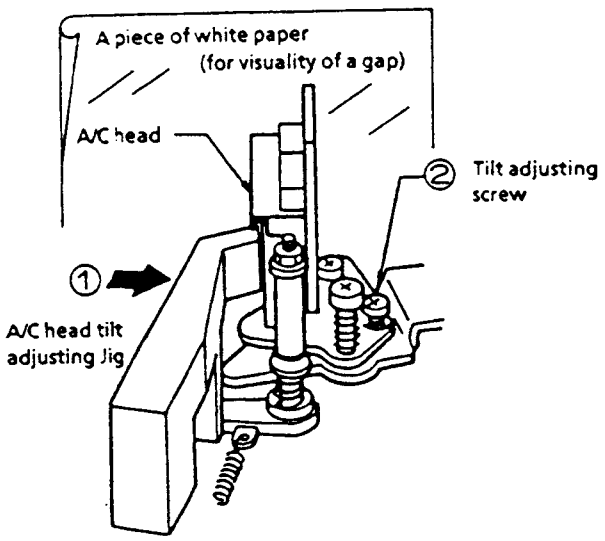


Figure 1-47.

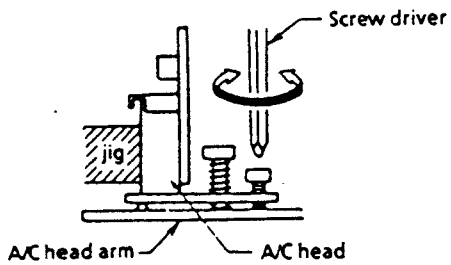
- Adjustment

[A/C head tilt angle]

1. Set the mechanism to the loading mode.
2. Place the A/C head tilt adjusting Jig ①.
3. Slowly turn the tilt adjusting screw ② with a screw driver until there is no gap between the Jig and the A/C head.



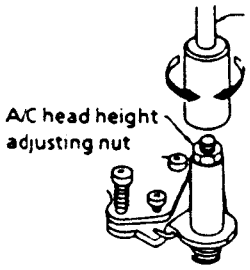
(a)



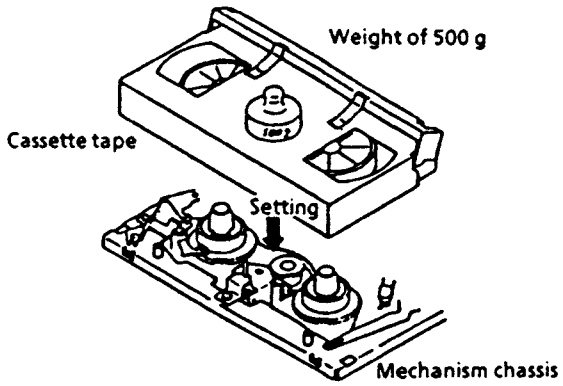
(b)

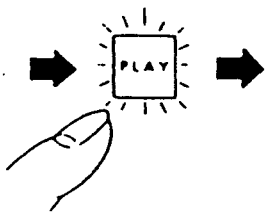
Figure 1-48.

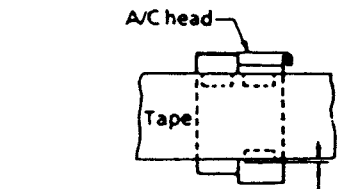
[A/C head height rough adjustment]



Roughly adjust the height of the A/C head by turning the A/C head adjusting hexagon nut with the specialized box driver until the tape is in the position shown below.







Adjust the nut visually so that the control head is visible 0.3 to 0.5 mm below the bottom of the tape.

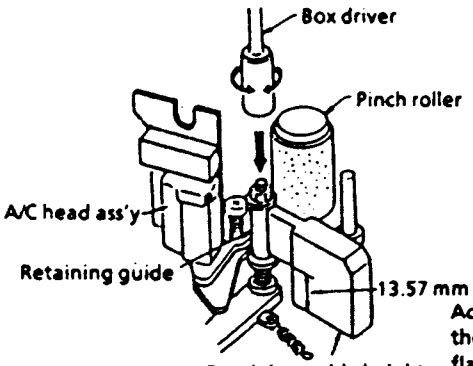
Figure 1-49.

HEIGHT ADJUSTMENT OF RETAINING GUIDE AND REVERSE GUIDE

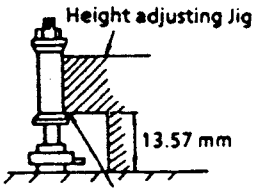
Note:

Before the rough adjustment of the tape drive train, check that the retaining guide height is within the value in Figure 1-50 by using the special Jigs.

[Height adjustment of retaining guide]



(a)

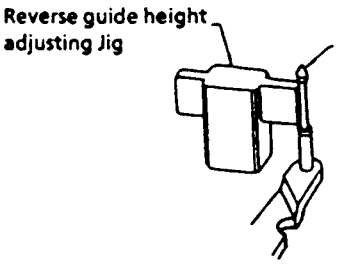


Adjust the gap to zero between the adjustment Jig and the lower flange of the retaining guide.

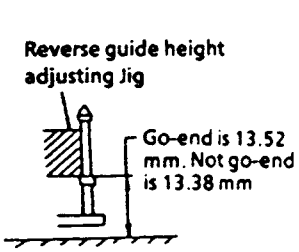
(b)

Figure 1-50.

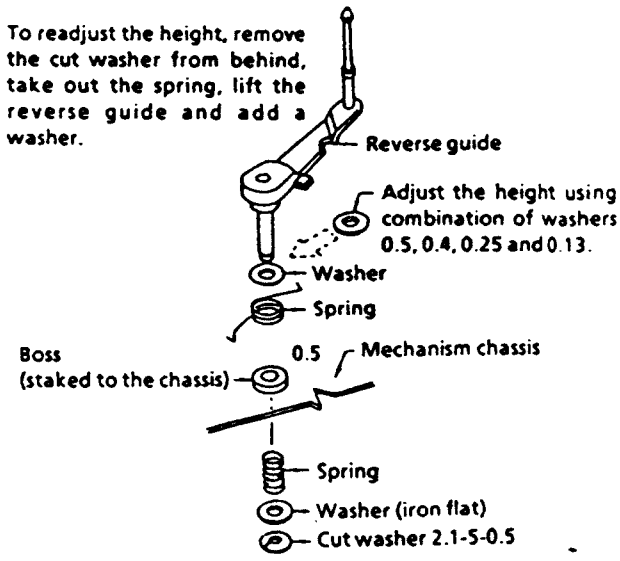
[Height adjustment of reverse guide]



(a)



(b)


To readjust the height, remove the cut washer from behind, take out the spring, lift the reverse guide and add a washer.
Reverse guide
Adjust the height using combination of washers 0.5, 0.4, 0.25 and 0.13.
Washer
Spring
Boss (staked to the chassis)
0.5
Mechanism chassis
Spring
Washer (iron flat)
Cut washer 2.1-5-0.5

(c)

Figure 1-51.

ADJUSTMENT OF TAPE DRIVE TRAIN

1. Remove the cassette housing control assembly.
2. Check and adjust the position of the tension pole. (See page 19.)
3. Check and adjust the video search rewind back tension. (See page 18.)
4. Set the tilt angle of the A/C head. (See page 22.)
5. Rough adjustment of tape drive train.
   a) Connect the oscilloscope to the test point for PB CHROMA envelope output (TP2201). Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP2202).
   b) Loosen the setscrew at the lower part of the guide roller, and adjust it with an adjusting screw driver (JIGDRIVERH-4) so that the guide roller turns smoothly. (Do not overloosen the setscrew, which causes insecurity of the guide roller.) (See Figure 1-52.)
   c) Set the alignment tape (monoscope pattern) on the reel disk, and place the unit in the play-back mode.
   (Place a 500 g. weight on the cassette tape to prevent floating of the cassette tape.)

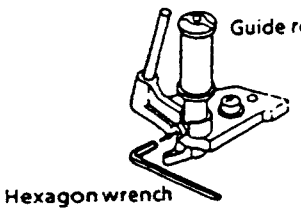


Figure 1-52.

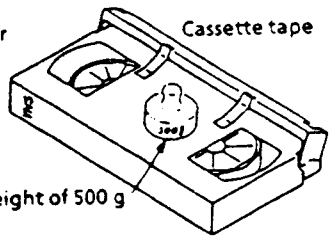
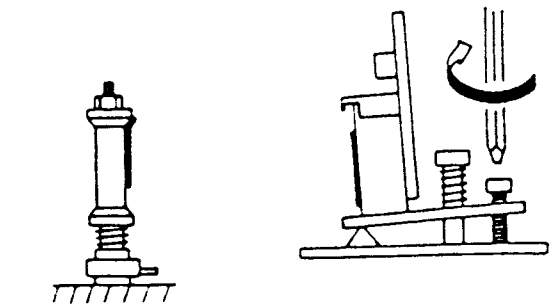
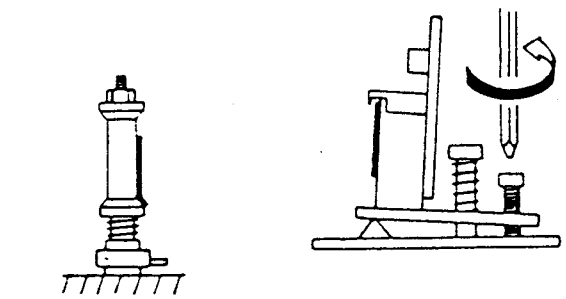


Figure 1-53.

   d) Change the envelope waveform from MAX to MIN, and MIN to MAX by pushing the (+) or (-) tracking button, and check a flat response is obtained on the waveform.
   e) If a flat response cannot be obtained, roughly adjust the guide rollers on the supply side and take-up side using an adjusting screw driver until a flat response can be obtained.
   f) Turn the A/C head tilt adjusting screw with a screwdriver to prevent the tape from wrinkling at the upper and lower flanges of the fixed guide.
      1) Wrinkles at the upper flange : Turn the above adjusting screw clockwise, as shown in Fig. 1-54 (a).
      2) Wrinkles at the lower flange : Turn the above adjusting screw counterclockwise, as shown in Fig. 1-54 (b).



(a)



(b)

Figure 1-54.

Notes:
1. Place the tracking control in the center position, and adjust the X-position adjusting nut so that the PB CHROMA envelop becomes maximum for easier rough adjustment of the tape drive train.
2. In the rough adjustment, pay particular attention to the outlet side.

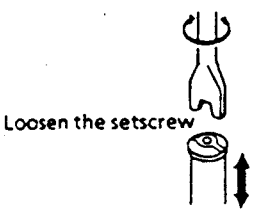


Figure 1-55.

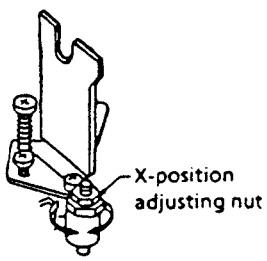


Figure 1-56.

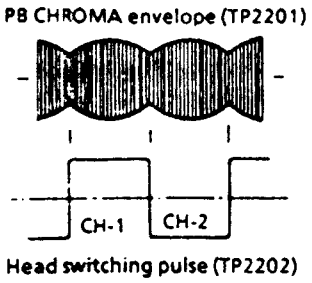


Figure 1-57.

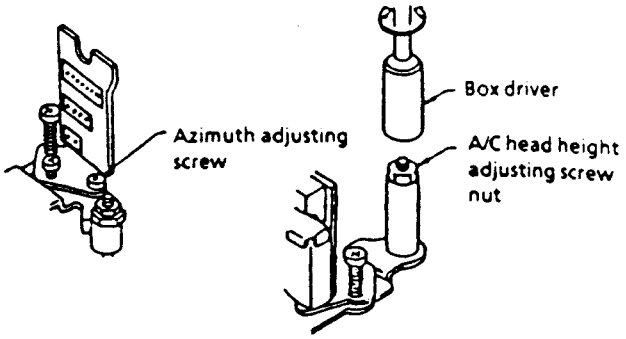


Figure 1-58.

Figure 1-59.

6. Adjustment of A/C head height and azimuth
   a) Connect an oscilloscope to the audio output terminal.
   b) Use the alignment tape and play back its audio 6 kHz signal (monoscope pattern for video signal). Adjust the azimuth adjusting screw to obtain the maximum audio output on an oscilloscope. (See Figure 1-58.)
   c) Use the alignment tape and play back its audio 1 kHz signal (colour bar for video signal) and slowly rotate the A/C head height adjusting nut with the special box driver to obtain the maximum audio output.
   d) Perform the adjustment in b) again.
   e) After this adjustment, apply glyptal to the screws and nuts to fix them.

7. Adjustment of tape drive train and X-Position.
   a) Connect the oscilloscope to the test points (TP2201) for PB CHROMA envelope output. Set the synchronism of the oscilloscope to EXT. The PB CHROMA signal is to be triggered by the head switching pulse (TP2202).
   b) Play back the tape drive train alignment tape.
   c) Push the (+) or (–) button to change the envelope waveform from MAX to MIN, and MIN to MAX. Adjust the guide roller's height on the supply and take-up sides with an adjusting screw driver, to obtain an envelop waveform that is as flat as possible.
   d) If the tape is above or below the helical lead, the PB CHROMA waveform will take the shape shown in Figure 1-60.
   e) Adjust for maximum flatness of the envelope as the step 5, e) in page 24.

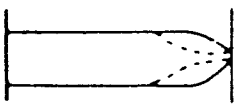
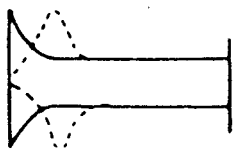
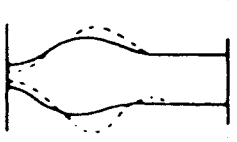
	When the tape is above the helical lead.		When the tape is below the helical lead.	
	Supply side	Take-up side	Supply side	Take-up side
				
				
Adjustment	Supply side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Take-up side guide roller rotated in clockwise direction (lowers guide roller) to flatten envelope.	Supply side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The supply side guide roller is then rotated in the clockwise direction to flatten the envelope.	Take-up side guide roller rotated in counterclockwise direction (raises guide roller) to make the tape float above the helical lead. The take-up side guide roller is then rotated in the clockwise direction to flatten the envelope.

Figure 1-60.

f) Push the (+) or (–) tracking button to check that a flat response is obtained on the envelope waveform.
g) Secure the guide roller by tightening the guide roller setscrew in the unloading mode.
h) Play back the tape drive train alignment tape to check that the envelope waveform does not change.

8. Adjustment of A/C head X-position.
a) Push the (+) and (–) tracking buttons at the same time to the preset mode.
b) Rotate the X-position adjusting nut with an adjusting box driver, and adjust the A/C head position for maximum head switching pulse low side envelope.
c) Adjust the playback switching point.
d) Check the flatness of the envelope waveform and sound by playing back a recorded tape.

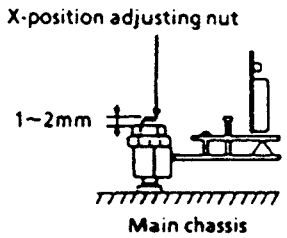


Figure 1-61.

REPLACEMENT OF THE CAPSTAN D.D. (DIRECT DRIVE) MOTOR

- Remove the cassette housing control assembly.

- Removal (Follow the order of indicated numbers.)

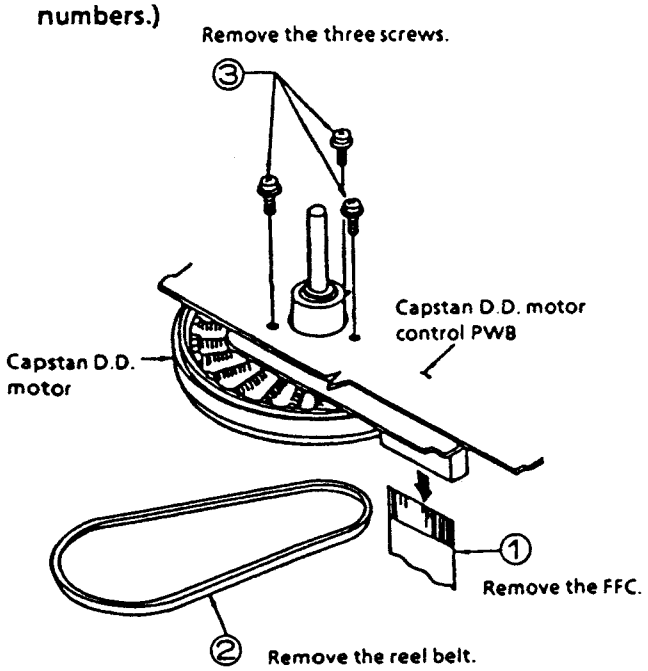


Figure 1-62.

- Reassembly

1. Mount the capstan motor on the mechanism chassis making sure not to allow the capstan shaft to hit the mechanism chassis, and attach it with the three screws.
2. Insert the FFC into the capstan D.D. motor control PWB.
3. Attach the reel belt.

Notes:

1. After installing the capstan D.D. motor, be sure to rotate the capstan D.D. motor and check the movement.
2. Check and adjust the servo circuit.

REMOVAL AND REASSEMBLY OF THE LOADING GEAR BLOCK

1. Remove the cassette housing control assembly.
2. Remove the reel belt.
3. Remove the reel block.

- Removal

Notes:

1. Use care not to deform the parts hooked to the take-up loading gear and supply loading gear as shown in Figure 1-63.

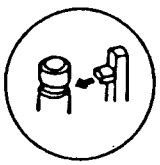


Figure 1-63.

2. In removing the loading gear, secure the guide roller with a rubber band or the like beforehand for easier reassembly.

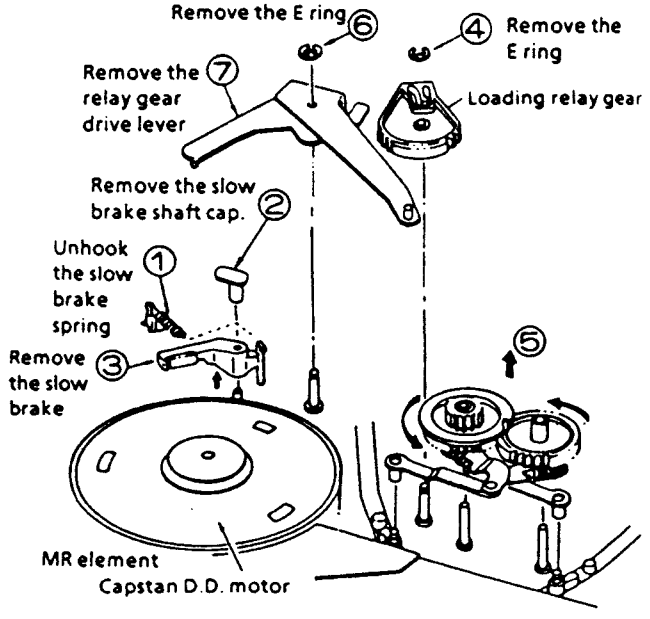

Remove the E ring
Remove the E ring
Remove the relay gear drive lever
Loading relay gear
Remove the slow brake shaft cap.
Unhook the slow brake spring
Remove the slow brake
MR element
Capstan D.D. motor

Figure 1-64.

1. Remove the slow brake spring ①.
2. Remove the slow brake shaft cap ②.
3. Remove the slow brake lever ③.
4. Remove the E ring ④.
5. Rotate the take-up loading gear, take-up loading arm assembly, supply loading gear and supply loading arm assembly slightly in the loading direction, and take them ⑤ all out.
6. Remove the E ring ⑥.
7. Remove the relay gear drive lever ⑦.

- **Reassembly**

Reverse the procedure. Be sure to match the tally marks on the gears.

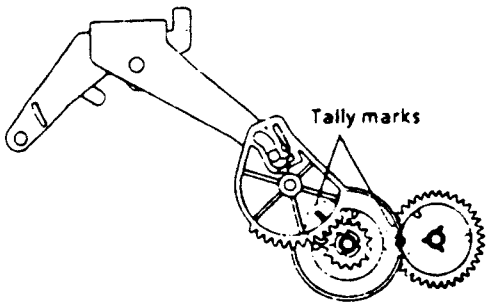


Figure 1-65.

Notes:

1. When reassembling, apply specified grease to the following points; all the gear teeth, all the gear shafts and the cam groove of loading relay gear.
2. Be careful not to deform the supply/take-up loading arms.
3. Be careful to keep clean the slow brake lever felt.
4. Be also careful to keep the outer surface of the capstan D.D. motor free from dust and dirt. (If stained, the MR (Magnet Resistor) element might be damaged.)
5. Take care not to deform the anti-fall hooks of the slow brake lever and supply/ take-up loading gears more than required.

REMOVAL AND REASSEMBLY OF LOADING BLOCK

- **Removal**

1. Remove the leads ①.
2. Remove the cassette loading belt ②.
3. Unscrew the three screws ③.
4. Pull the loading block upward.

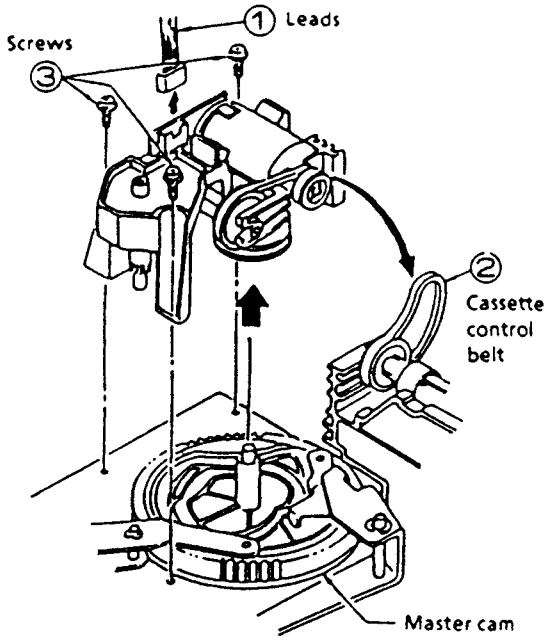


Figure 1-66.

Note:
When using a magnetic screw driver in removal of three screws, do not allow the magnetic driver to hit the A/C head or drums.

- **Reassembly**

1. Turn the master cam all the way counter-clockwise.
2. Match the tally mark on the cam switch with the mating mark. Fit the loading block and the master cam with each other. Tighten up the three screws.

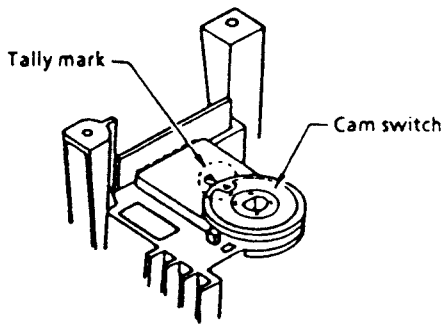


Figure 1-67.

3. Finally connect the leads and apply the cassette loading belt.

Notes:

1. Be careful not to scratch the gear.
2. Be careful not to stain the belt. If dirty, clean it up with the specified cleaning liquid.

REPLACEMENT OF LOADING MOTOR

1. Set the cassette ejected condition by placing the unit in the cassette eject mode.
2. Unplug the power cord.
3. Remove the loading block in accordance with the statements and drawings above.

- Removal

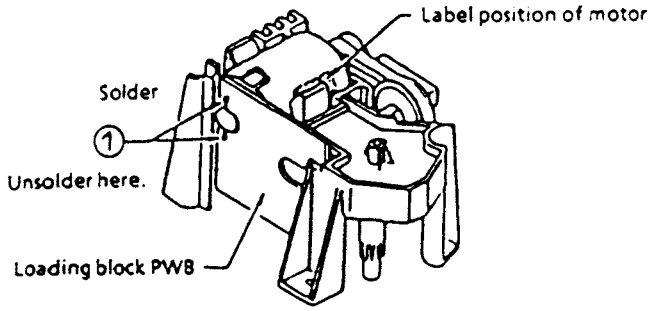


Figure 1-68.

1. Unsolder the leads ① from the loading motor.
2. Unlock the left and right catches ② of the cam switch off the loading block. Take out the cam switch and loading block PWB (See Figure 1-69).

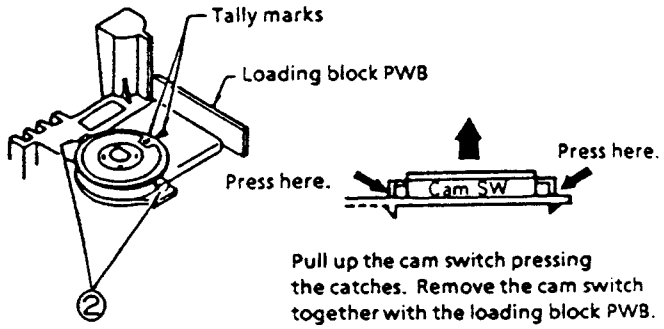

Tally marks
Loading block PWB
Press here.
Press here.
Cam SW
Pull up the cam switch pressing the catches. Remove the cam switch together with the loading block PWB.
②
Catches of cam switch

Figure 1-69.

3. Take out the loading belt ③.
4. Pry up the back end of the loading motor with a screw driver or the like as in Figure 1-70 and take out the motor.

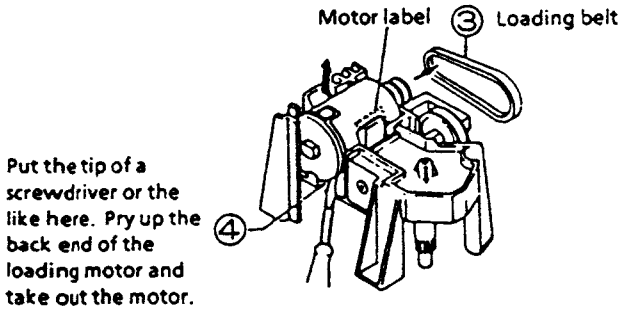

Motor label
③
Loading belt
Put the tip of a screwdriver or the like here. Pry up the back end of the loading motor and take out the motor.
④

Figure 1-70.

- Reassembly

1. Remove the loading motor, and mount a new loading motor as in Figure 1-71.
2. Place the loading motor so that its label is visible as shown in Figure 1-71. Make sure that the screw hole at the motor shaft, protuberance on the loading block, and the motor's back end marked with the arrow are mated with each other.

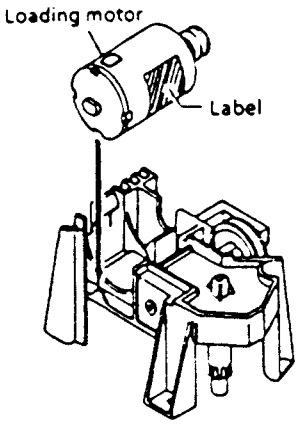
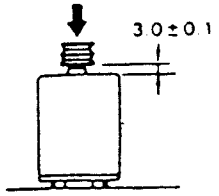


Figure 1-71.



Note:
When press-fitting the loading motor pulley, keep the pressure less than 5 kg, and the gap between the motor and pulley should be 3.0 ± 0.1 mm.

Figure 1-72.

3. Set the loading block PWB and the cam switch in position.
4. Resolder the leads to the loading motor.
5. Finally place the loading block (See page 27).
6. Attach the loading belt.

REPLACEMENT OF MASTER CAM

- Removal

1. Remove the E ring ①.
2. Remove the half-loading drive lever ②.
3. Remove the E ring ③.
4. Remove the pinch roller lever ④.
5. Pull out the master cam ⑤ upward.

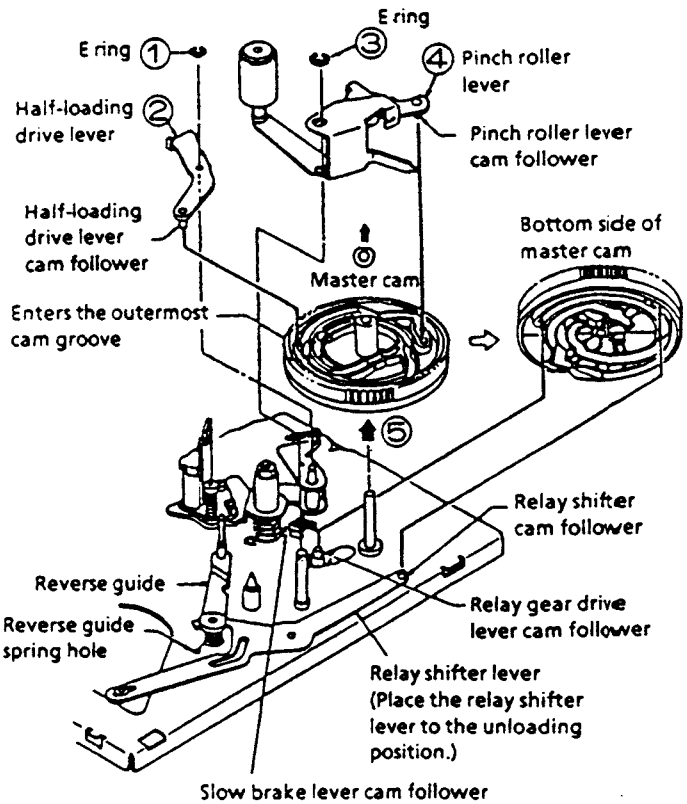

E ring
E ring ①
③
④ Pinch roller lever
Half-loading ② drive lever
Pinch roller lever cam follower
Half-loading drive lever cam follower
Bottom side of master cam
Master cam
Enters the outermost cam groove
⑤
Relay shifter cam follower
Reverse guide
Relay gear drive lever cam follower
Reverse guide spring hole
Relay shifter lever (Place the relay shifter lever to the unloading position.)
Slow brake lever cam follower

Figure 1-73.

- **Reassembly**

1. Place the relay gear drive lever in the unloading state.
2. Place the relay shifter so that it is in contact with the reverse guide spring hole in the mechanism chassis. Release the slow brake lever with a finger to bring it away from the capstan (in the direction of arrow). Then place the master cam so that the D cut-off part of the master cam faces the direction of arrow.
3. Place the half- loading recipro lever's cam follower so that it fits in the master cam's circumferential cam groove (marked with arrow), attach the E ring, then mount the half-loading recipro lever.
4. Turn the master cam somewhat clockwise until the pinch roller lever's cam follower goes into the master cam's groove (marked with arrow). Mount the pinch roller lever and then attach the E ring.
5. Rotate the master cam by hand to make sure all the four levers (relay gear drive lever, half-loading recipro lever, pinch roller lever, and relay shifter lever) are in the cam grooves in place.
6. Mount the loading block. (See page 27.)

Notes:

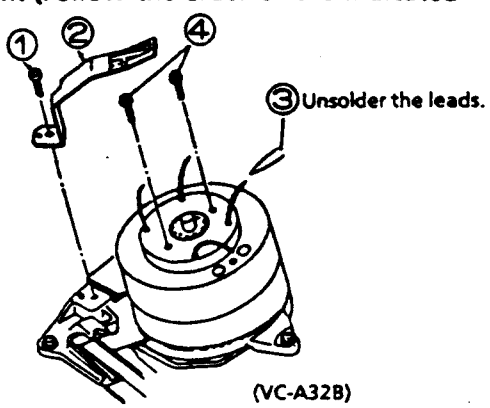
1. Be careful not to scratch the teeth and grooves of the master cam.
2. After installation of the master cam, be sure to rotate the master cam by hand before installing the loading block. If the levers are in wrong position, the master cam and the levers may get damaged when the motor stares.
3. Apply specified grease to the master cam's grooves and teeth.

REPLACEMENT OF UPPER DRUM

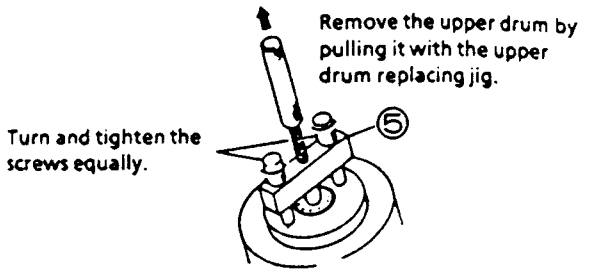
Note:

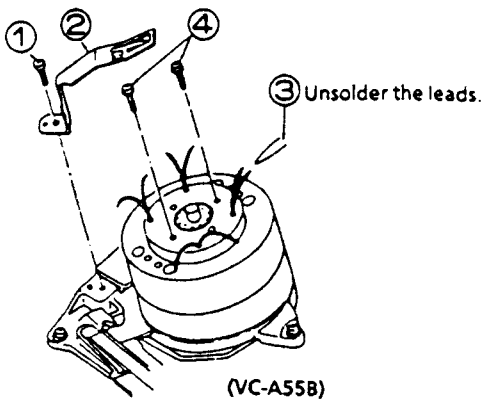
The gap between the lower drum and the upper drum is very accurate, in the order of microns, and care should be paid to their replacement. Even a slight amount of foreign material will affect the accuracy of their reassembly.

- **Replacement (Follow the order of the indicated numbers.)**



(VC-A32B)





(VC-A55B)

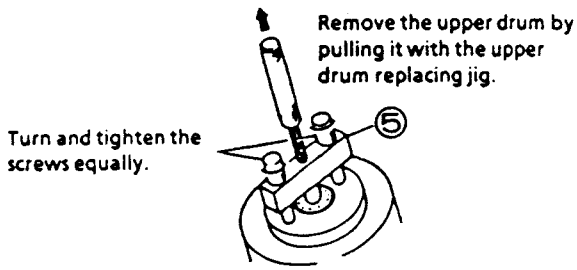


Figure 1-74.

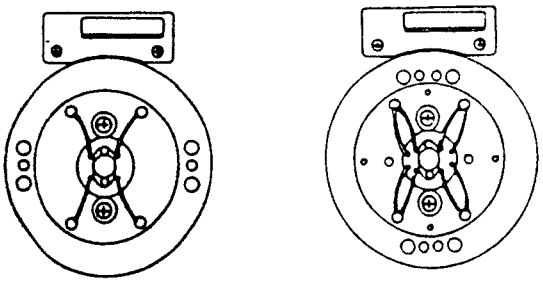
Notes:

1. Avoid touching the drum surface with bare hands.
2. Pull out the upper drum with care so that it may not be tilted, and replace it with the upper drum replacing jig using care not to damage the disk circumference.
3. Do not hit the screws when tightening them.

- **Reassembly**

Notes:

1. Before setting the drum, check that there are no scratches or dust on the edge of the surface and circumference of the disk.
2. Before setting the drum, check that there are no scratches or dust on the internal surface and edge of the surface of the upper drum.
3. On assembling these parts, insert the upper drum onto the disk with care, so that the upper drum is not tilted.
4. When assembling these parts, do not allow dust or dirt come between the disk and the upper drum.
5. Do not use excessive force when driving in the screws.



(VC-A32B) (VC-A55B)

Figure 1-75.

1. Set the new drum.
2. Fasten the upper drum in place with the two screws.
3. Solder the leads.
   Note:
   Soldering should be performed quickly and carefully without touching adjacent patterns.
4. After replacement, be sure to check the tape drive train adjustment (see page 24.) and the following electric adjustments.

- Adjustment of the playback switching point.
- Checking and adjustment of the X-position.

REPLACEMENT OF D.D. MOTOR

1. Put the unit in the cassette eject position.
2. Unplug the power cord.

- **Removal (Reverse the order in reassembly.)**

1. Remove the FFC ①.
2. Remove the two D.D. rotor assembly setscrews ②.
3. Pull out the D.D. rotor ass'y ③.
4. Remove the three D.D. stator setscrews ④.
5. Remove the D.D. stator assembly ⑤.

Notes:

1. When removing the D.D. rotor assembly or D.D. stator assembly, use care not to hit the loading relay gear.
2. Secure the D.D. rotor assembly so that the installation positioning holes in the D.D. rotor assembly and lower drum assembly match.
3. Be careful not to damage the upper drum or the video head.
4. Be sure that the hall device and the D.D. stator assembly are not damaged by the D.D. rotor assembly or other parts.
5. After installation, adjust the playback switching point.

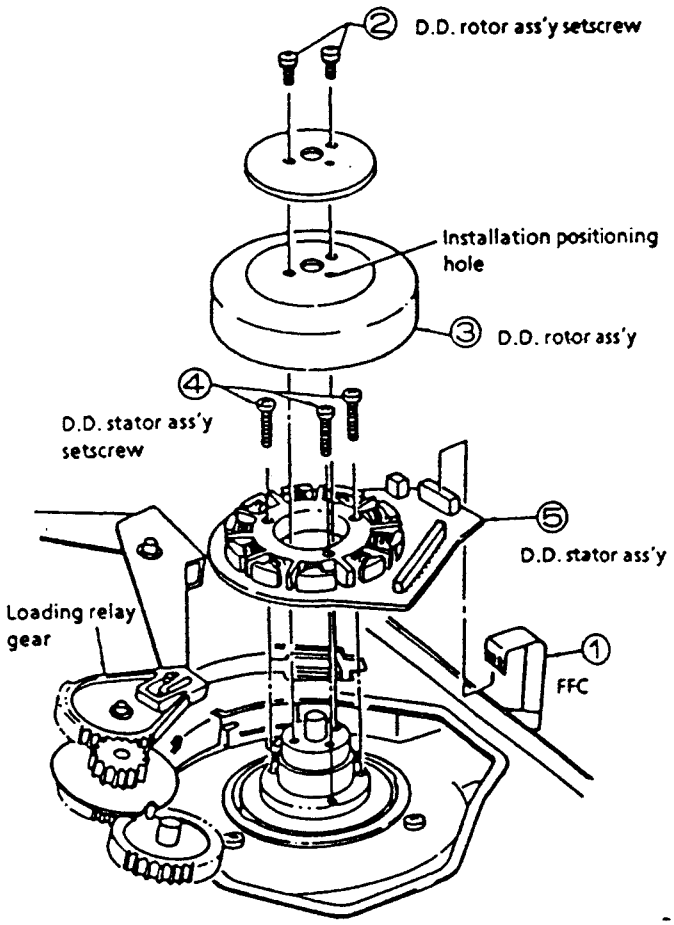


Figure 1-76.

REPLACING THE AHC (AUTOMATIC HEAD CLEANER) (VC-A55B only)

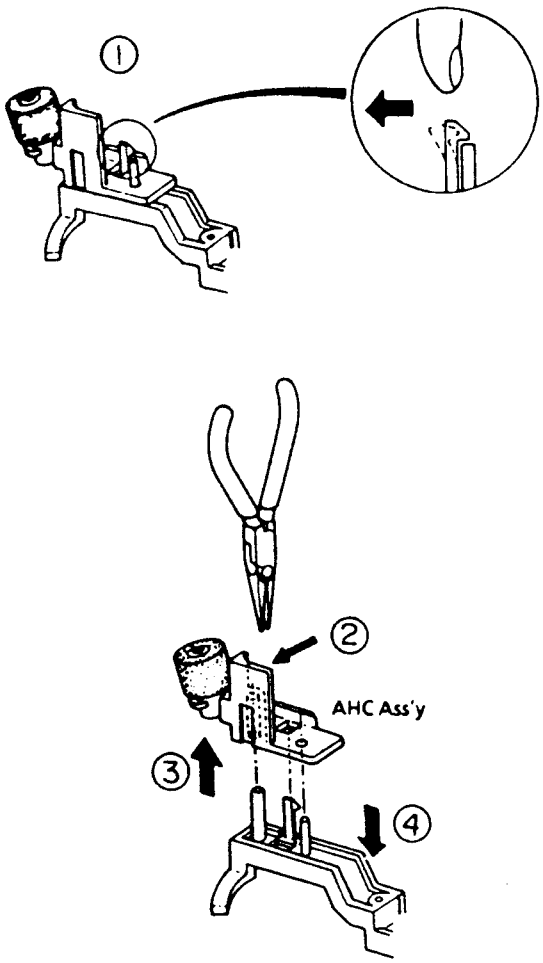


Figure 1-77.

- **Removal**

Unhook part ① with a finger in the direction of arrow.
Hold the rib (marked with an arrow) of the AHC ass'y ② with electrician's pliers or the like, and pull the ass'y upward in the direction of arrow ③.

Note:
To pull out the AHC ass'y, hold the AHC lever down.

- **Reassembly**

Push down the AHC ass'y in the direction of arrow ④. Make sure that the ass'y is secured in position by the hook of part ①.

Notes:
1. Be careful to keep the AHC ass'y out of contact with the drum.
2. Be careful to keep the cleaner section of the ass'y free of grease or contaminants.

ADJUSTMENT OF THE ELECTRICAL CIRCUITRY

Notes:

- Before the adjustment:
  Electrical adjustments discussed here are often required after replacement of electronic components and mechanical parts such as video heads.
  Check that the mechanism and all electric components are in good working condition prior to the adjustment, otherwise adjustments can not be completed.

- Instruments required:
  ◎ Colour TV monitor
  ◎ Dual-trace oscilloscope
  ◎ AC milli-voltmeter
  ◎ Frequency counter
  ◎ VHF signal generator
  ◎ Alignment tape (VROCPSV)
  ◎ Colour bar generator
  ◎ Audio signal generator
  ◎ DC voltmeter
  ◎ Blank video cassette tape
  ◎ Screwdriver for adjustment

☆ Servicing precautions
When the IC5003 E²PROM in the timer module has been replaced,make the following reprogramming.
Depending on models,the IC5003 E²PROM has been factry-adjusted for its memory function.
It is therefore necessary to reprogram the memory function for the model in question.
Note that the servo circuit requires readjustments for the head switching point,slow and still modes.

SERVO CIRCUIT ADJUSTMENT

ADJUSTMENT OF HEAD SWITCHING POINT

Measuring instrument	Dual-trace oscilloscope Monitor TV
Mode	Playback
Control	Tracking control buttons (+) and (−)
Cassette	Alignment tape(VROCPSV)
Test point	CH-1: TP2202 CH-2: Video output terminal (CH-1 trigger slope switch at (+), Internal trigger at CH-1 side)
Specification	6.5 ± 0.5H (lines)

1. Put the unit in playback mode. (VROCPSV)
   (Playback picture on the monitor screen.)
2. Make the cathode of the timer D5001 and R5001 (pin46 side of IC5001) on the timer module short circuited.
   (Be sure that all the fluorescent display tubes light up into the TEST mode.)
3. Press both (+) and (−) TRACKING buttons at the same time.
4. Be sure that "PLAY" appears in the fluorescent displayed tubes flashing (about 1Hz) into the operating.
5. Stop the "PLAY" appears in the flashing of Fluorescent display tubes at adjusted.
6. Press the whichever button in the return to normal mode.
7. Make this checking of waveform on the oscilloscope screen be as shown in Figure 2-1. just after the head switching point have been adjusted.

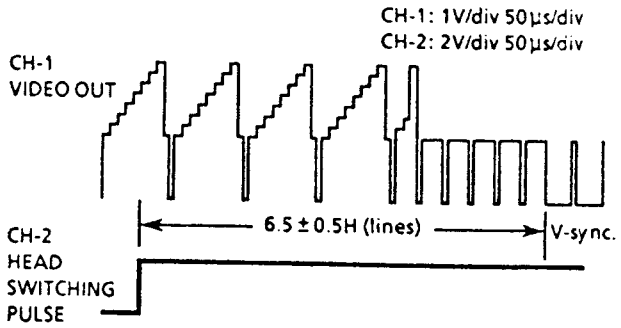


Figure 2-1.

ADJUSTMENT OF SP SLOW TRACKING PRESET

Measuring instrument	Colour TV monitor
Mode	Playback
Cassette	Self-recorded tape (See note ① below)
Control	Tracking control button (+) or (−)
Specification	Minimized noise on monitor screen

1. Have the unit to receive a good TV broadcast or feed a video signal to the VIDEO IN jack.
   (See Note ② below)
2. Set the tape speed in SP mode by using the remote control and record the signal on tape.
3. Rewind and play the tape where signal was recorded in above step.

4. Press the SLOW button on the remote control, and playback the recorded portion in the slow mode.
5. Make the cathode of the timer D5001 and R5001 (pin46 side of IC5001) on the timer module short circuited.
   (Be sure that all the fluorescent display tubes light up into the TEST mode.)
6. Look at the monitor screen and adjust the (+) or (−) TRACKING buttons so that the there is noise disappears from the screen.
7. Press the ALL CLEAR button in the return to normal mode.
8. Play the tape a few seconds then press the SLOW button again and make sure there is on noise in the screen.

Notes:

① Self-recorded tape means a cassette whose program was recorded by the unit being adjusted.

② The TV program will not be recorded if RCA or 21 pin plugs are pluged in to the AUDIO/VIDEO input terminals.

ADJUSTMENT OF LP SLOW TRACKING PRESET

Measuring instrument	Colour TV monitor
Mode	Playback
Cassette	Self-recorded tape (See note(1)below)
Control	Tracking control button (+) or (−)
Specification	Minimized noise on monitor screen

1. Have the unit to receive a good TV broadcast or feed a video signal to the VIDEO IN jack. (See Note ② below)
2. Set the tape speed in LP mode by using the remote control and record the signal on tape.
3. Rewind and play the tape where signal was recorded in above step.
4. Press the SLOW button on the remote control, and playback the recorded portion in the slow mode.
5. Make the cathode of the timer D5001 and R5001 (pin 46 side of IC5001) on the timer module short circuited.
   (Be sure that all the fluorescent display tubes light up into the TEST mode.)
6. Look at the monitor screen and adjust the (+) or (−) TRACKING buttons so that the there is noise disappears from the screen.
7. Press the ALL CLEAR button in the return to normal mode.
8. Play the tape a few seconds then press the SLOW button again and make sure there is on noise in the screen.

Notes:

① Self-recorded tape means a cassette whose program was recorded by the unit being adjusted.

② The TV program will not be recorded if RCA or 21 pin plugs are pluged in to the AUDIO/VIDEO input terminals.

ADJUSTMENT OF FV(False Vertical Sync) OF STILL PICTURE.

Measuring instrument	Colour TV monitor
Mode	Playback still
Cassette	Self-recorded tape (SP/LP) (See Note below)
Control	Tracking control button (+) or (−)
Specification	No vertical jitter of picture

1. Play a cassette which was recorded by the unit in SP mode.
2. Press the PAUSE/STILL button on the remote control to freeze the picture.
3. Look at the monitor screen and adjust the (+) or (−) TRACKING buttons so that vertical jitter of the picture to be minimum.
4. Play and freeze the self-recorded tape in SP/LP mode and make sure vertical jitter of the picture is not noticeable.

Notes:

① The FV goes back to the its initial state when the unit is put into the system controller reset mode due to power failure, etc. In this case, preset the FV once again.

② Self-recorded tape is a cassette whose program was recorded by the unit being adjusted.

Y/C CIRCUIT ADJUSTMENT

ADJUSTMENT OF VIDEO E-E GAIN

Measuring instrument	Oscilloscope
Mode	E-E or Record
Input signal	EIA colour bar (1.0Vp-p)
Test point	VIDEO OUT jack
Control	R202
Specification	1.0V ± 0.08Vp-p

1. Connect a 75 ohm terminating resistor to the VIDEO OUT jack and connect an oscilloscope across this terminating resistor. (See Note ① below.)
2. Feed a colour bar signal to the VIDEO IN jack.
3. Adjust R202 so that the signal amplitude is 1.0Vp-p as shown in Figure 2-2.

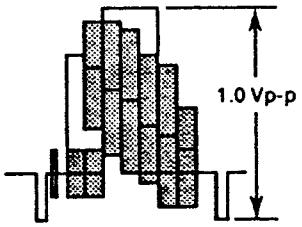


Figure 2-2.

Notes:

① If the 75 ohm terminating resistor is missing, the signal amplitude will be doubled.

② After this adjustment, check the deviation of FM luminance signal. (R204 Frequency and Deviation adjustment.)

ADJUSTMENT OF VCO

Measuring instrument	DC Voltmeter
Mode	E-E or Record
Input signal	EIA colour bar (1.0Vp-p)
Test point	TP501(Signal),TP202(GND)
Control	FL501
Specification	2.25V ± 0.05V

1. Feed a colour bar signal to the VIDEO IN jack.
2. Connect a DC voltmeter to test points TP501 (Sig.) and TP202 (GND).
3. Adjust FL501 so that the DC voltmeter reads 2.25V ± 0.05V.

ADJUSTMENT OF WHITE CLIP

Measuring instrument	Oscilloscope
Mode	E-E or Record
Input signal	EIA colour bar (1.0Vp-p)
Test point	TP201 (Signal), TP202 (GND)
Control	R203 White clip control
Specification	190 ± 5% (See note below)

1. Connect an oscilloscope to test points TP201 (Sig) and TP202 (GND).
2. Feed the colour bar signal to the VIDEO IN jack and set the unit in E-E or recording mode.
3. Adjust R203 so that the overshoot of the video signal is clipped at 190% as shown in Figure 2-3.

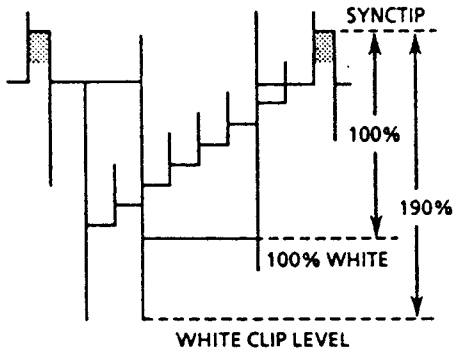


Figure 2-3.

Notes:

From sync tip to white peak,the level is 100%.
The white clip level is 90% above the white level.
(There is no dark clip adjustment.)

ADJUSTMENT OF FM CARRIER FREQUENCY AND DEVIATION

Measuring instrument	Frequency counter Oscilloscope
Mode	Record/Playback
Input signal	EIA colour bar (1.0Vp-p)
Test point	TP203 (pin 43 of IC401) VIDEO OUT jack
Control	R205 FM carrier control R204 Deviation control
Specification	3.8 ± 0.05MHz 1.0 ± 0.04Vp-p

1. Be sure that R202 (E-E level) has been correctly adjusted.
2. Connect a 75 ohm terminating resistor to the VIDEO OUT jack and connect an oscilloscope across this resistor.
   (See Note below.)
3. Connect a frequency counter to test point TP203 (SIG) ~ TP202 (GND).
4. Put the unit in A/V input mode.
   Do not feed any signal to the VIDEO IN jack.
   (Disconnect any cable from video input terminal.)
5. Under this condition,adjust R205 so that the frequency counter reads 3.8MHz.
6. Feed the EIA standard colour bar signal to the VIDEO IN jack and adjust R204 so that the frequency counter reads 4.3MHz.
7. Repeat step 5 thru 7 a few times.
8. Under this condition record the EIA colour bar on tape, rewind and play back.
9. Make sure that the amplitude of the playback colour bar signal is 1.0 ± 0.04Vp-p as shown in Figure 2-4.
   If it is out of specified value,check the PLAYBACK LEVEL (R201) and retry this adjustment.

Notes:
If the 75 ohm terminating resistor is missing, the signal amplitude will be doubled.

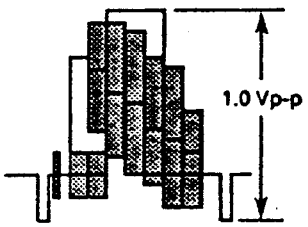


Figure 2-4.

ADJUSTMENT OF PLAYBACK GAIN

Measuring instrument	Oscilloscope
Mode	Playback
Cassette	Alignment tape (VROCPSV)
Test point	VIDEO OUT jack
Control	R201
Specification	1.0 ± 0.08Vp-p

1. Connect a 75 ohm terminating resistor to the VIDEO OUT jack and connect an oscilloscope across this terminating resistor.
   (See Note below.)
2. Play the colour bar portion of the alignment tape and adjust R201 so that the signal amplitude is 1.0Vp-p as shown in Figure 2-5.

Notes:
If the 75 ohm terminating resistor is missing, the signal amplitude will be doubled.

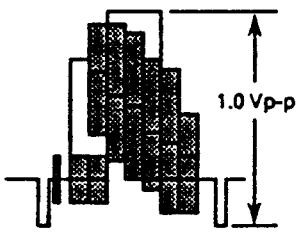


Figure 2-5.

Y/C module
Location of controls and test point

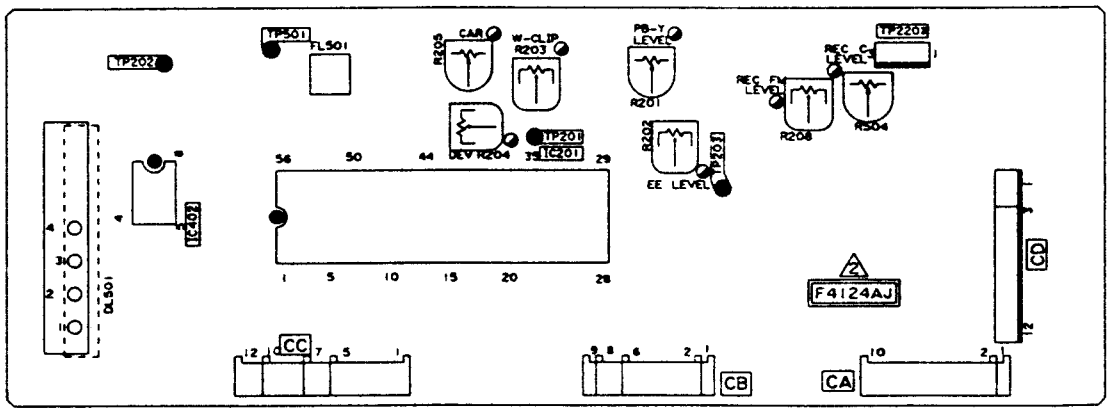


Figure 2-6.

AUDIO CIRCUIT

CHECKING OF LINEAR AUDIO PLAYBACK LEVEL (2/4 Head models)

Measuring instrument	AC milli-voltmeter
Mode	Playback
Input signal	Alignment tape (VROCPSV) (1kHz level control signal)
Test point	AUDIO OUT jack
Specification	– 8 ± 2dB (at RCA Jack) – 3.8dB (at 21 pin jack)

1. Play back the alignment tape (VROCPSV 1kHz level audio signal).
2. Connect an AC milli-voltmeter to the AUDIO OUT jack.
3. Make sure that the output level is value shown in table.

CHECKING OF AUDIO RECORD LEVEL

Measuring instrument	AC milli-voltmeter or oscilloscope
Mode	Record/Playback
Input signal	1kHz, – 8dB (at RCA Jack) or 1kHz, – 3.8dB (at 21pin Jack)
Test point	AUDIO OUT jack
Specification	– 8 ± 2dB (at RCA Jack) – 3.8 ± 2dB (at 21 pin Jack)

1. Connect an oscilloscope to the AUDIO OUT jack.
2. Feed the audio signal shown in table to the AUDIO IN jack.
3. Make the self-recording and playback of the signal.
4. Make sure that the AUDIO OUT level is value shown in table. If it is out of specified value, verify the bias current (ADJUSTMENT OF LINEAR AUDIO BIAS CURRENT below).

ADJUSTMENT OF LINEAR AUDIO BIAS CURRENT

Measuring instrument	Oscilloscope
Mode	Record
Input signal	Not required
Test point	TP601 (+) ~ TP602 (–)
Control	R625
Specification	2.6 ± 0.1mVp-p

1. Connect the oscilloscope to test points TP601 (+) and TP602 (–). (Use TP602 for ground lead.)
2. Set the unit in recording mode.
3. Adjust R625 so that the signal amplitude is 2.6mVp-p.
4. Record and play a TV program and make sure the audio is not distorted.

CHECKING OF ERASE VOLTAGE AND OSCILLATION FREQUENCY

Measuring instrument	Oscilloscope
Mode	Record
Test point	Full erase head
Control	T601
Specification	70 ± 5kHz, 40Vp-p or greater

1. Put the unit in recording mode.
2. Connect an oscilloscope across the full erase head.
3. Make sure the erase voltage across the full erase head is approx. 40Vp-p or more and frequency is 70 ± 5kHz.

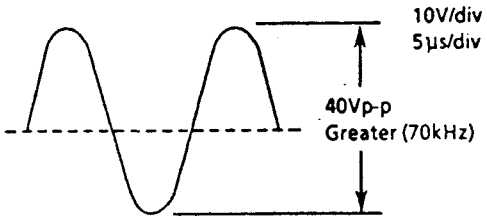


Figure 2-7.

ADJUSTMENT OF AFT CIRCUIT

Measuring instrument	Oscilloscope VHF band AM signal generator
Mode	Good TV commercial broadcast reception
Input signal	PIF frequency uniwave signal
Test point	TP1552 (Video output signal), TP1551 (GND)
Control	AFT coil control
Specification	----------

1. Have the unit received good TV commercial broadcast reception.
   (Input field strength: 70dBµV of antenna terminal.)
2. Using the VHF band AM signal generator, feed the PIF frequency (Figure 2-8.) signal (sine wave) to the tuner IF output terminal.
3. Connect an oscilloscope to test points TP1552 (Video output signal) and TP1551 (GND).

4. Set the CHANNEL SET switch or button to the VHF or UHF position. Keep the tuning button (+) or (−) depressed until the desired broadcast channel comes in clearly on your TV, and beating on the oscilloscope screen be minimum.
   Set the CHANNEL SET witch or button on the set position.
5. Adjust the turn the core of the AFT coil so that depressed until the beating on the oscilloscope screen be minimum.
   (AFT coil located on the IF unit.)

PIF frequency table

Version	Frequency
G, GM, S, SV, SM, N, E, NZ, B, BP, L, LM, NT, K, YM, SVM	38.9MHz
X	36.875MHz
H, HM, W, WT	39.5MHz
D, DT	38.0MHz

Figure 2-8.

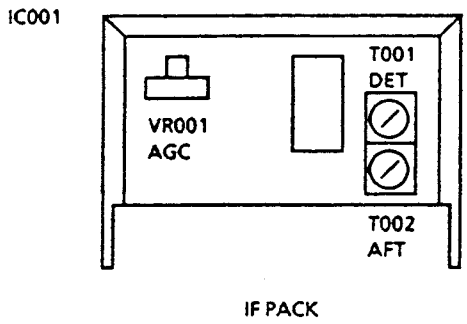


Figure 2-9.

ADJUSTMENT OF RF AGC CIRCUIT (Except G/Y/S/SV Version)

Measuring instrument	Oscilloscope
Mode	Good TV commercial broadcast reception (Split field colour bar signal)
Test point	TP1552 (Signal), TP1551 (GND)
Control	VR001 AGC control
Specification	Just before shrinking (See Figure 2-10.)

1. Have the unit received good TV commercial broadcast reception.
   (Input field strength: 80 dBμV of antenna terminal)
2. Connect an oscilloscope to test points TP1552 (Signal) and TP1551 (GND).
3. Observe the video output terminal waveform on the oscilloscope.
   Adjust VR001 (AGC control) in the IF pack until the noise disappears from the oscilloscope screen and the waveform nearly comes into sync.

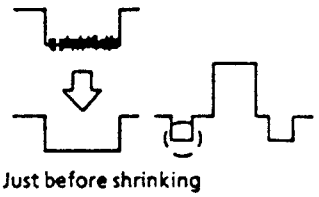


Figure 2-10.

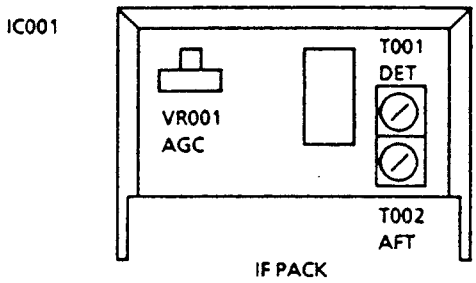


Figure 2-11.

ADJUSTMENT OF RF AGC CIRCUIT (Only G/Y S/SV Version)

Measuring instrument	DC voltmeter VHF signal generator
Mode	RF signal at E9-CH (by VHF signal generator) (EBU colour bar signal at 87.5% modulated.)
Test point	TP1553 (+), TP1551 (−)
Control	VR001 AGC control
Specification	3.03 ± 0.1V

1. Receive the E9 channel signal (colour bar signal at 87.5% modulated) at input field strength: 70dBμV of antenna terminal.
2. Connect a DC voltmeter to test points TP1553 (+) and TP1551 (−).
3. Adjust VR001 (AGC control) so that the voltage be specified.

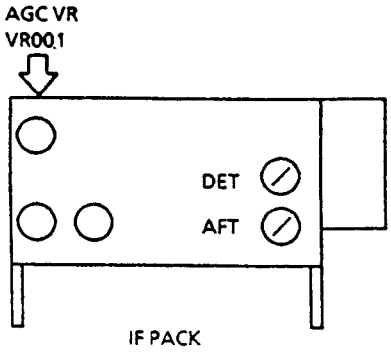


Figure 2-12.

Main module
Location of controls and test points

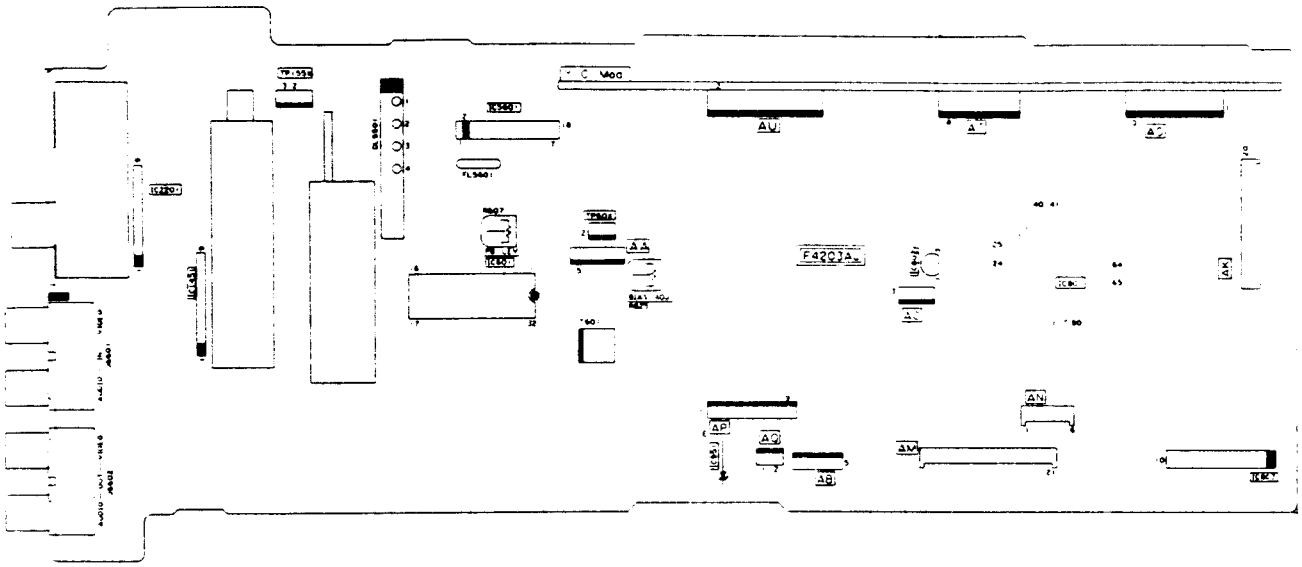
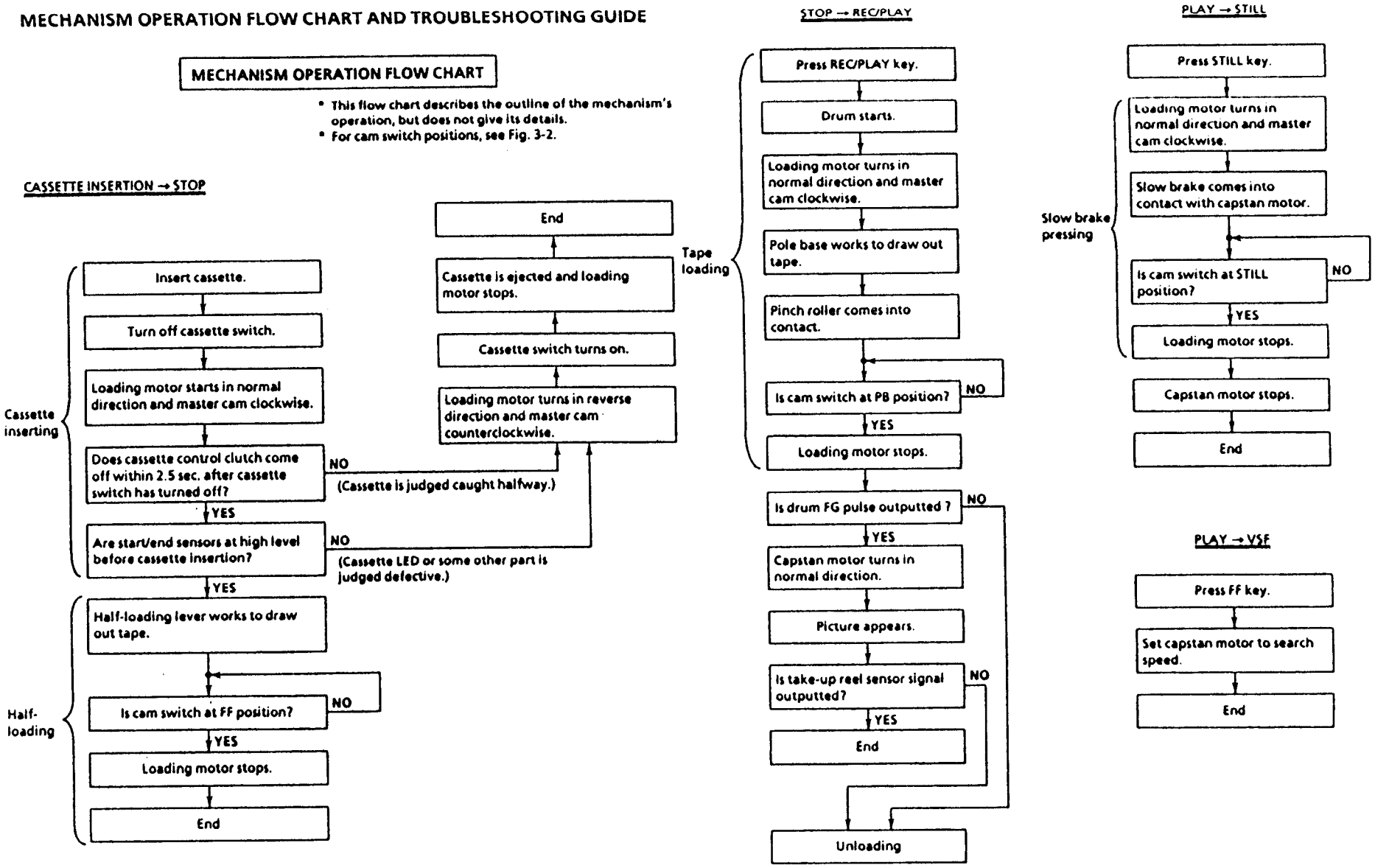


Figure 2-13.

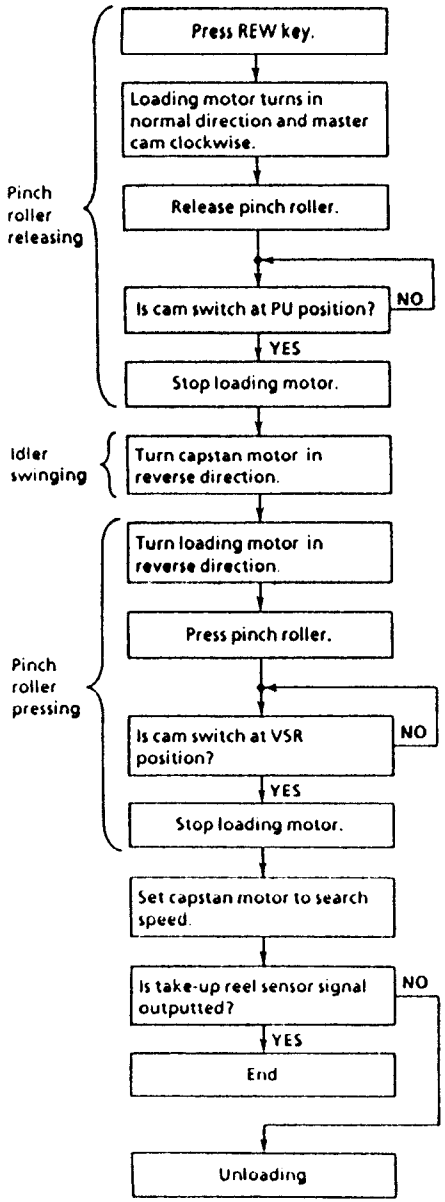
MECHANISM OPERATION FLOW CHART AND TROUBLESHOOTING GUIDE

MECHANISM OPERATION FLOW CHART

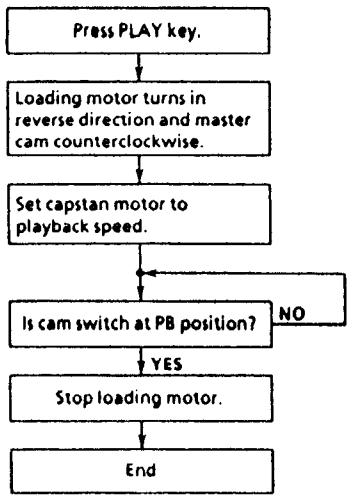
- This flow chart describes the outline of the mechanism's operation, but does not give its details.
- For cam switch positions, see Fig. 3-2.



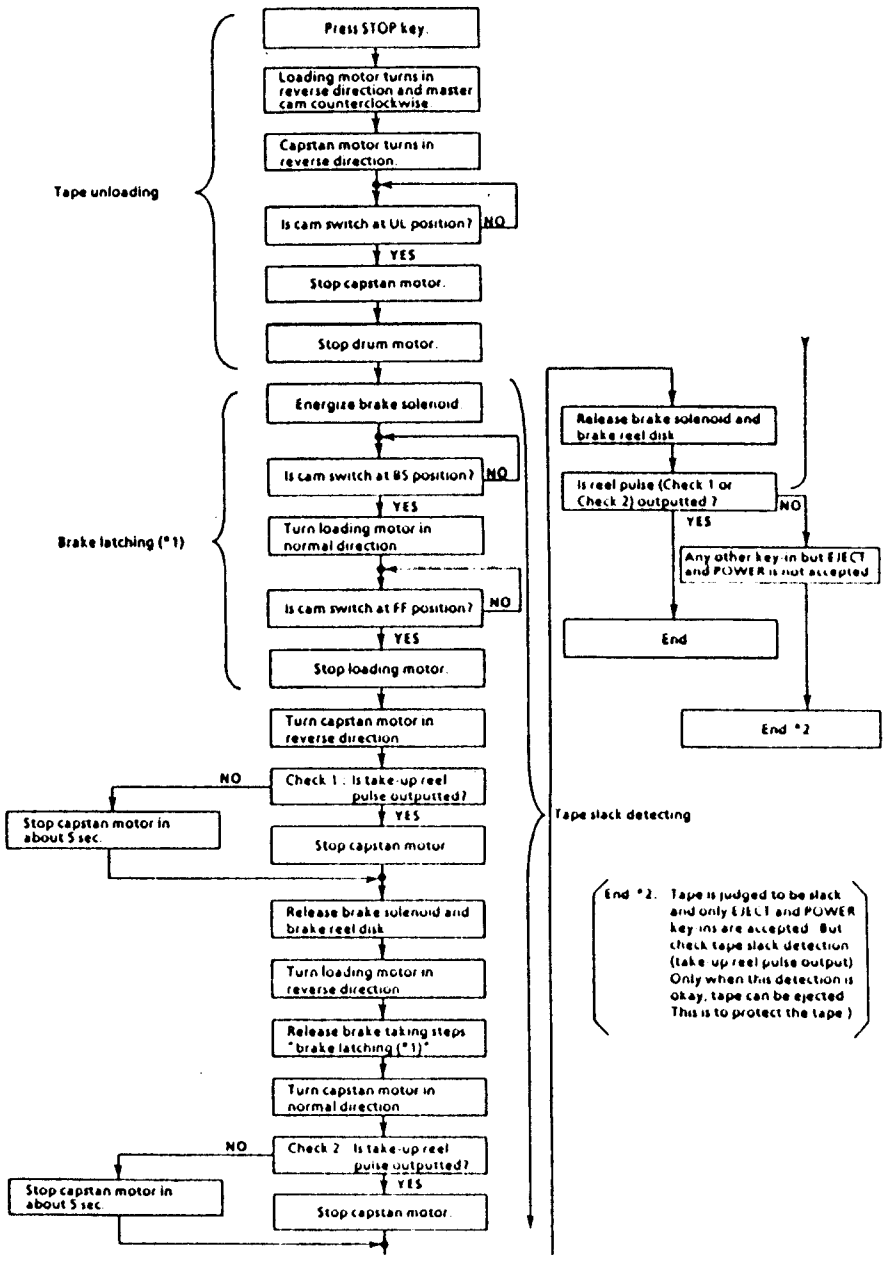
PLAY → VSR

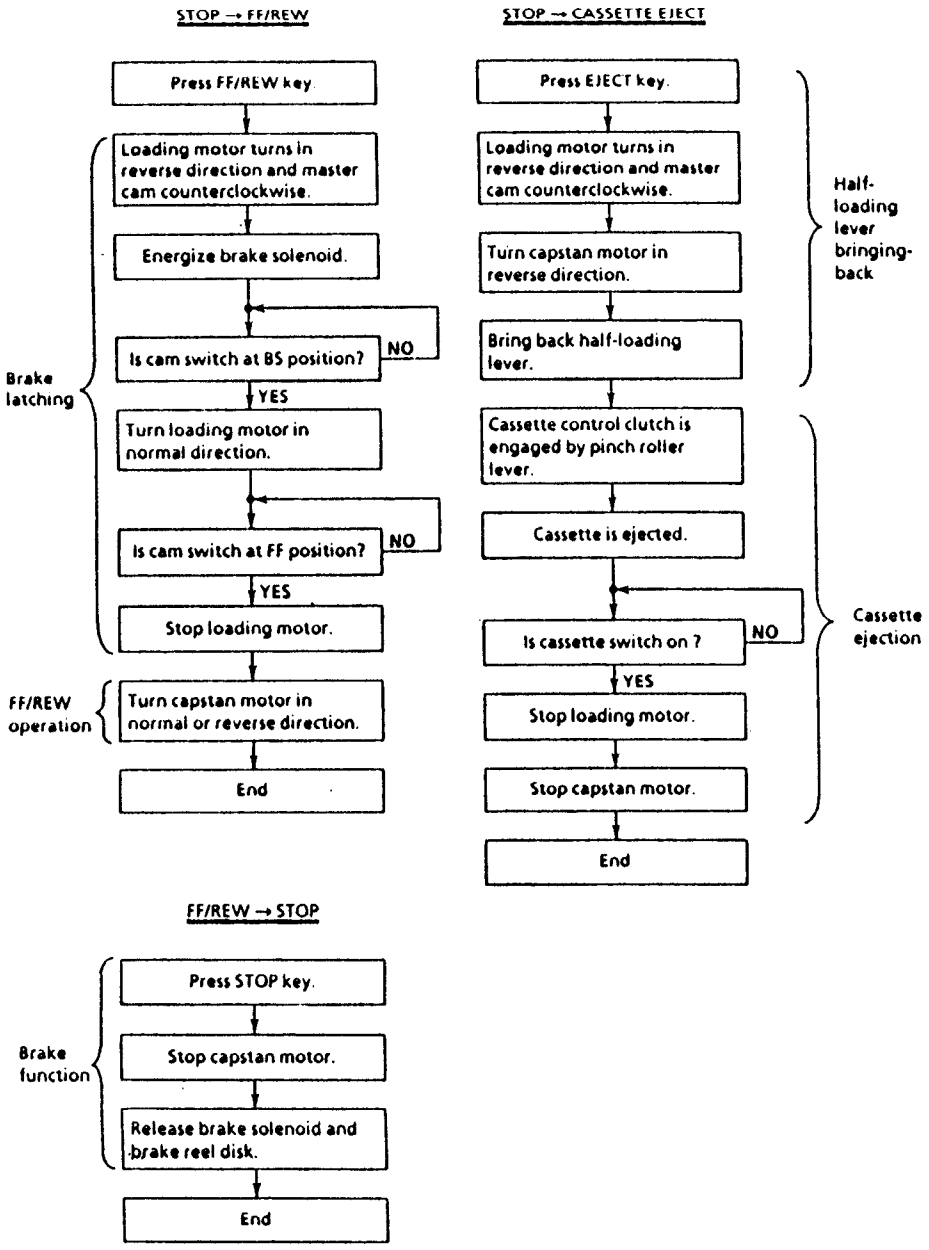


VSR → PLAY



REC/PLAY → STOP


Press STOP key.
Loading motor turns in reverse direction and master cam counterclockwise.
Capstan motor turns in reverse direction.
Is cam switch at UL position?
NO
YES
Stop capstan motor.
Stop drum motor.
Energize brake solenoid
Is cam switch at BS position?
NO
YES
Turn loading motor in normal direction
Is cam switch at FF position?
NO
YES
Stop loading motor.
Turn capstan motor in reverse direction
Check 1 : Is take-up reel pulse outputted?
NO
YES
Stop capstan motor in about 5 sec.
Stop capstan motor
Release brake solenoid and brake reel disk
Turn loading motor in reverse direction
Release brake taking steps "brake latching (*1)"
Turn capstan motor in normal direction
Check 2 : Is take-up reel pulse outputted?
NO
YES
Stop capstan motor in about 5 sec.
Stop capstan motor.
Release brake solenoid and brake reel disk
Is reel pulse (Check 1 or Check 2) outputted ?
NO
YES
Any other key-in but EJECT and POWER is not accepted
End
End *2
Tape unloading
Brake latching (*1)
Tape slack detecting
End *2. Tape is judged to be slack and only EJECT and POWER key-ins are accepted. But check tape slack detection (take-up reel pulse output). Only when this detection is okay, tape can be ejected. This is to protect the tape.)



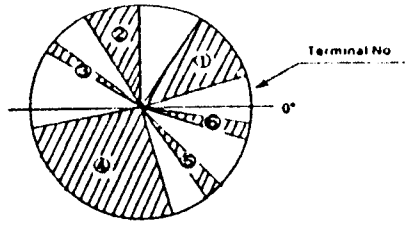


Fig. 3-1 Cam switch pattern

* The cam switch has the pattern as shown in Fig. 3-1. The circuit turns on when the signal comes on the shaded zones on the switch. The six pattern signals are judged to be on or off by the system controller in order to detect the mechanism modes.

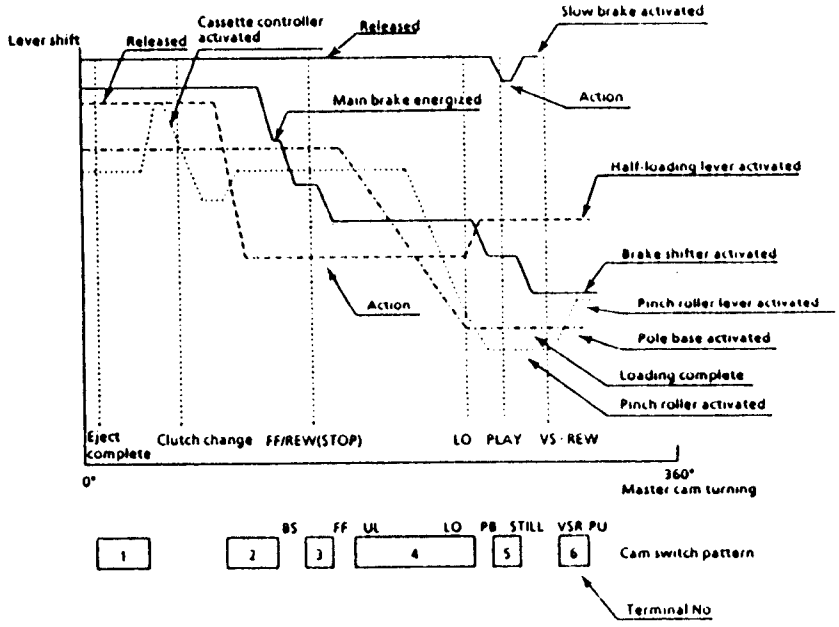
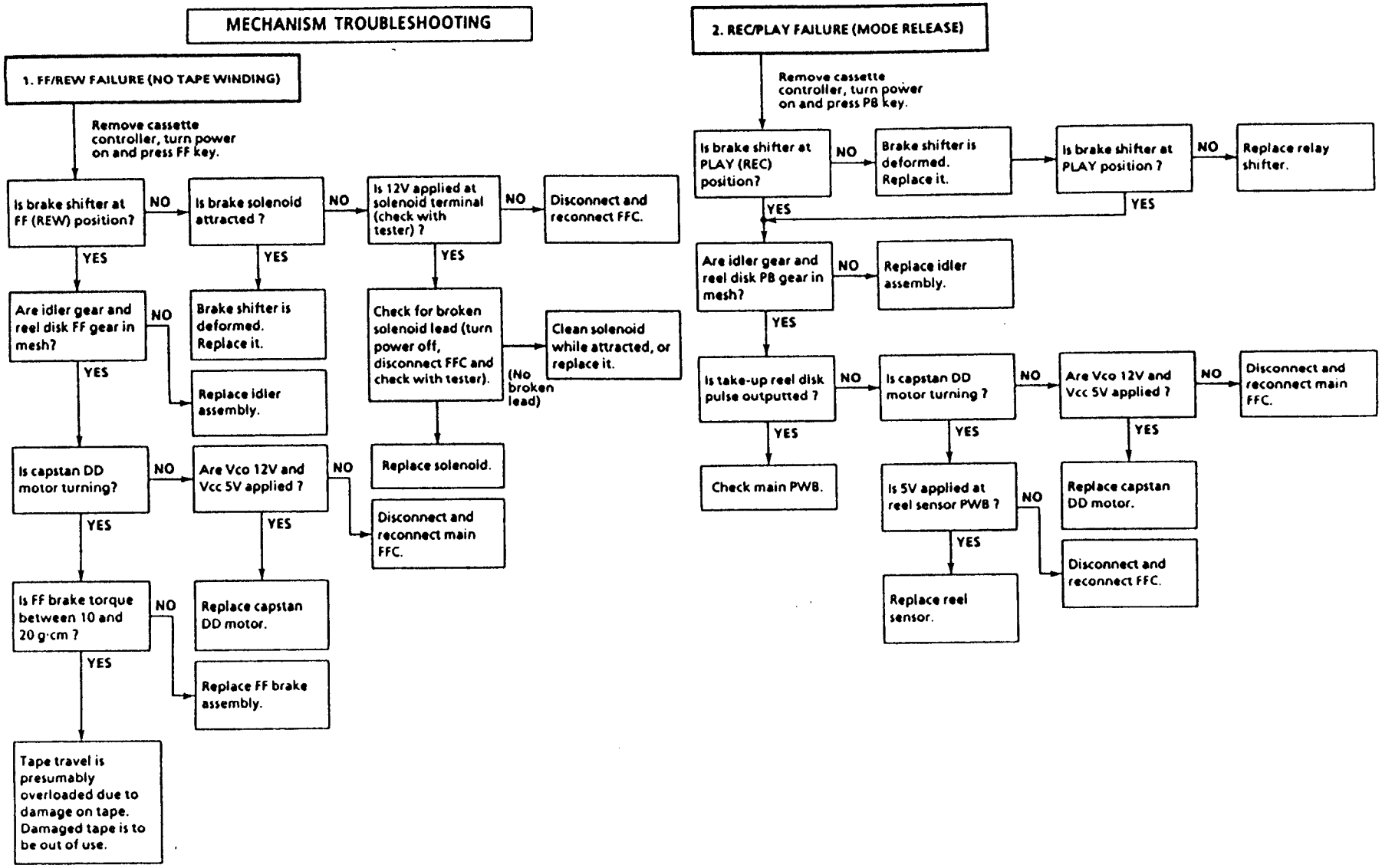
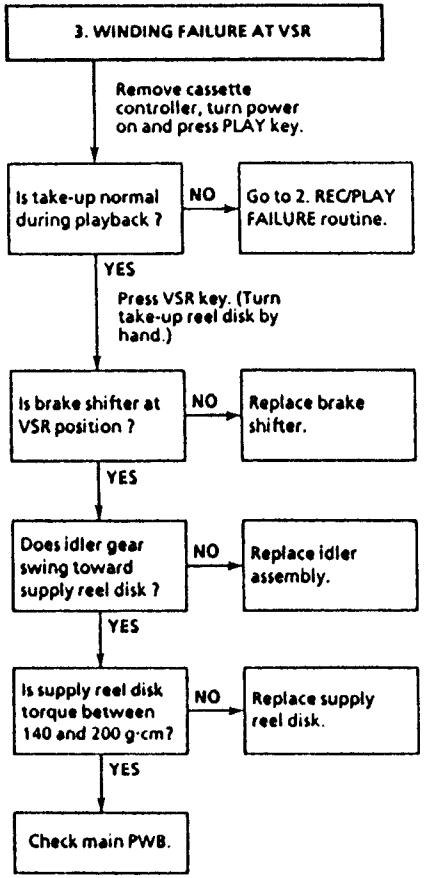


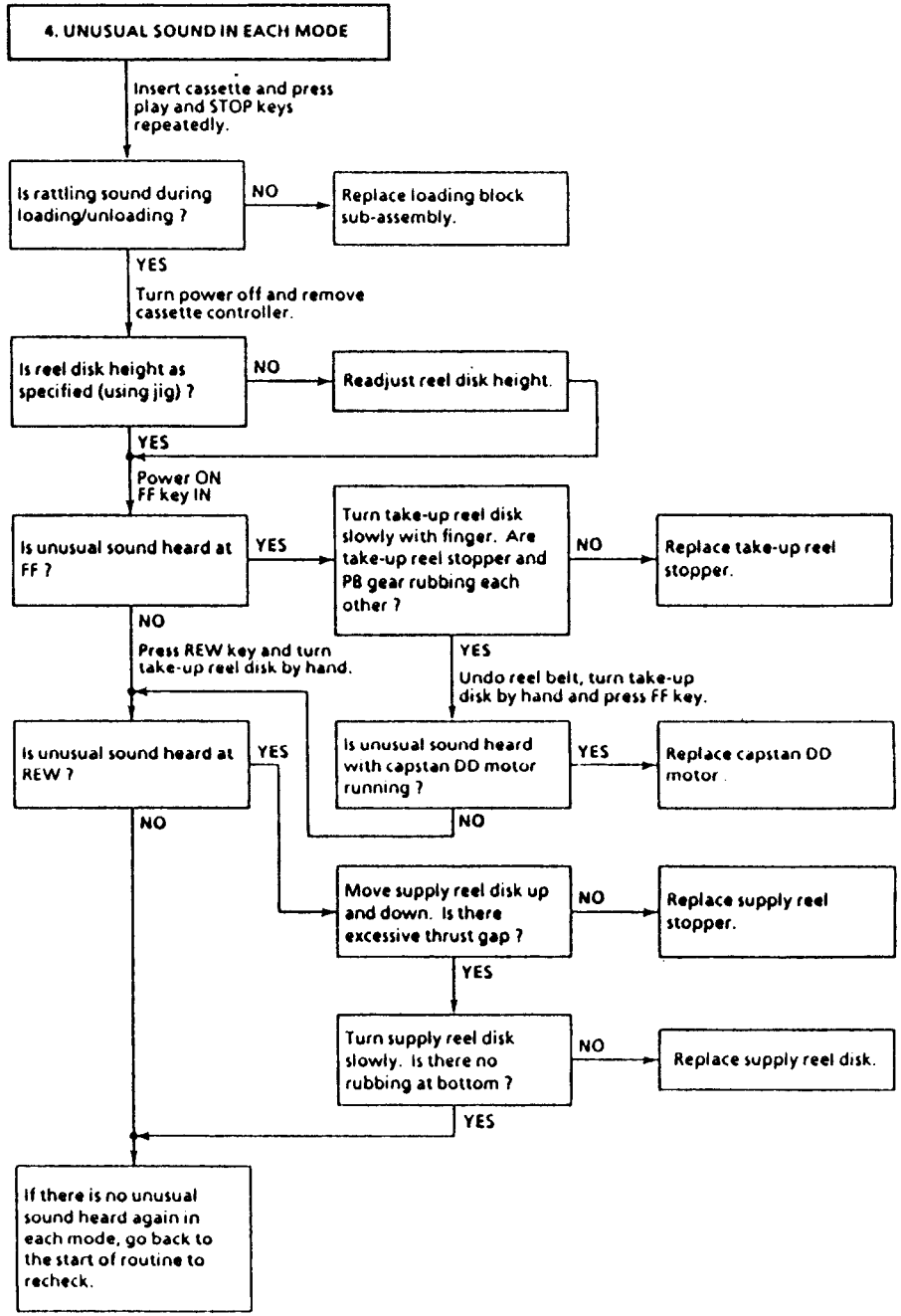
Fig. 3-2 Relationship between cam switch positions and mechanism movement

The relationship between the cam switch positions and the mechanism movement is shown in Fig. 3-2.

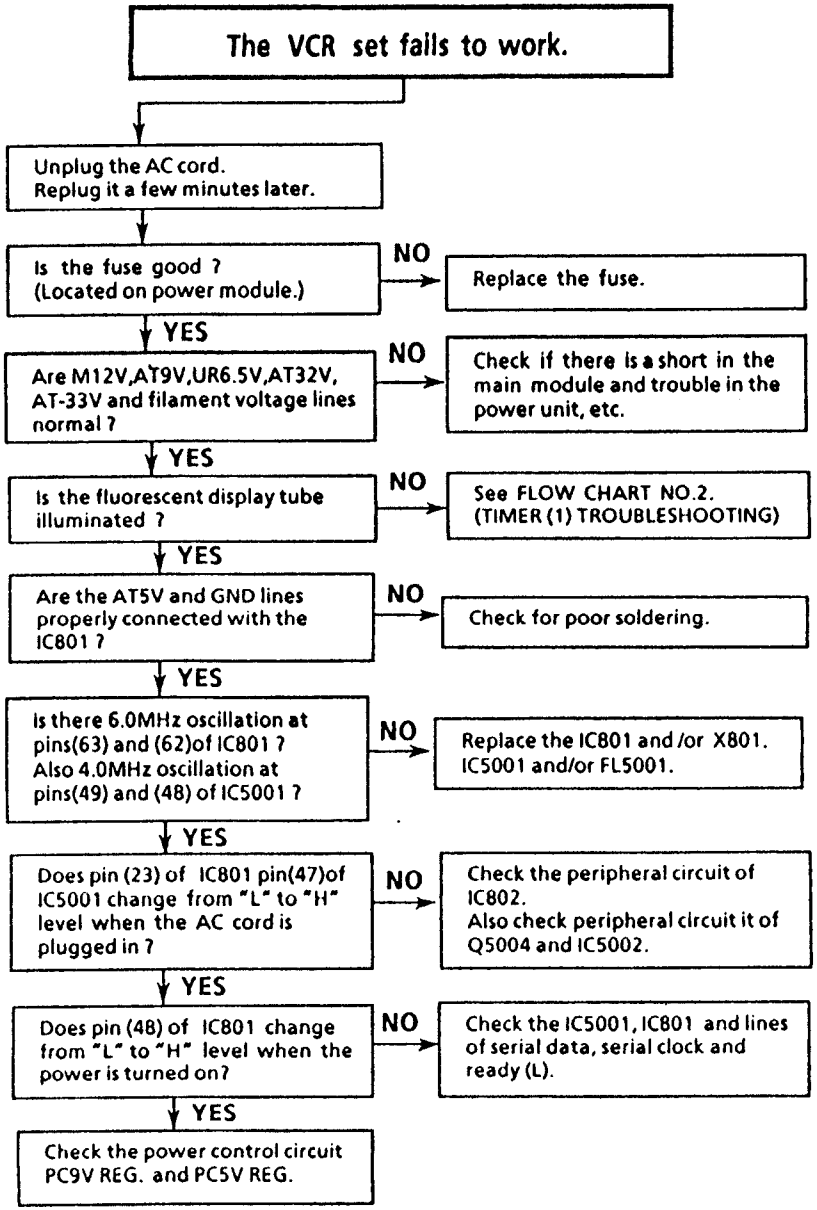
MECHANISM TROUBLESHOOTING


1. FF/REW FAILURE (NO TAPE WINDING)
Remove cassette controller, turn power on and press FF key.
Is brake shifter at FF (REW) position?
NO
Is brake solenoid attracted ?
NO
Is 12V applied at solenoid terminal (check with tester) ?
NO
Disconnect and reconnect FFC.
YES
YES
YES
Are idler gear and reel disk FF gear in mesh?
NO
Brake shifter is deformed. Replace it.
Check for broken solenoid lead (turn power off, disconnect FFC and check with tester).
Clean solenoid while attracted, or replace it.
(No broken lead)
YES
Replace idler assembly.
Is capstan DD motor turning?
NO
Are Vco 12V and Vcc 5V applied ?
NO
Replace solenoid.
YES
YES
Disconnect and reconnect main FFC.
Is FF brake torque between 10 and 20 g·cm ?
NO
Replace capstan DD motor.
YES
Replace FF brake assembly.
Tape travel is presumably overloaded due to damage on tape. Damaged tape is to be out of use.
2. REC/PLAY FAILURE (MODE RELEASE)
Remove cassette controller, turn power on and press PB key.
Is brake shifter at PLAY (REC) position?
NO
Brake shifter is deformed. Replace it.
Is brake shifter at PLAY position ?
NO
Replace relay shifter.
YES
YES
Are idler gear and reel disk PB gear in mesh?
NO
Replace idler assembly.
YES
Is take-up reel disk pulse outputted ?
NO
Is capstan DD motor turning ?
NO
Are Vco 12V and Vcc 5V applied ?
NO
Disconnect and reconnect main FFC.
YES
YES
YES
Check main PWB.
Is 5V applied at reel sensor PWB ?
NO
Replace capstan DD motor.
YES
Disconnect and reconnect FFC.
Replace reel sensor.

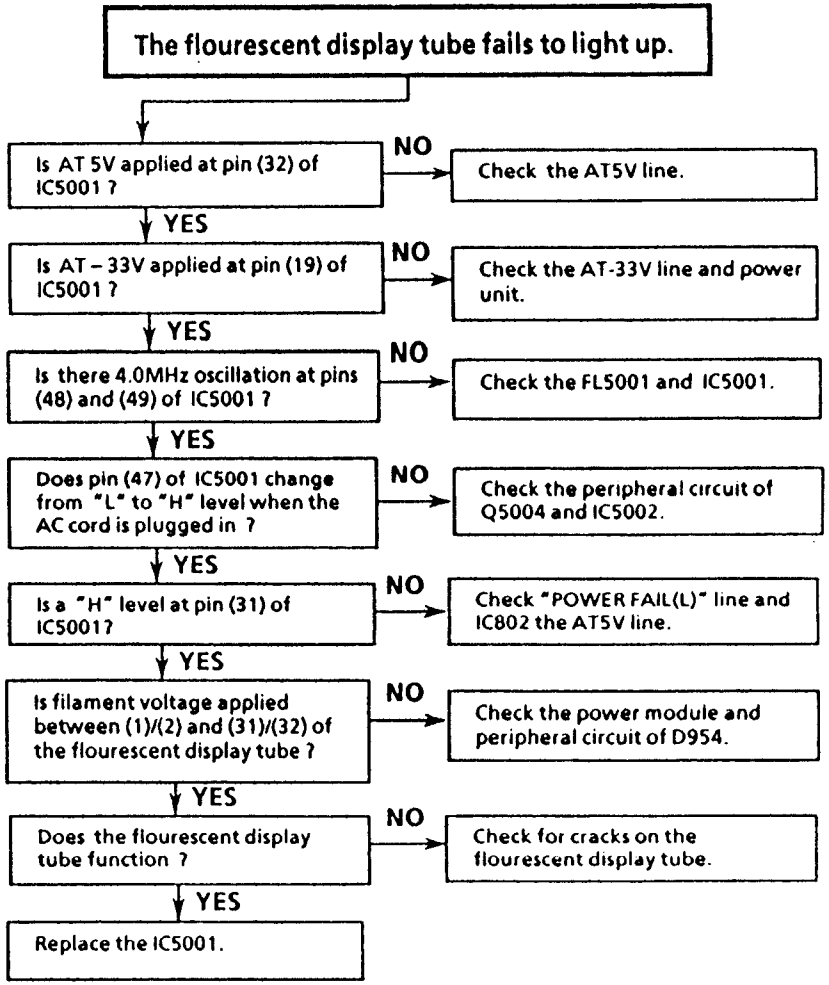

3. WINDING FAILURE AT VSR
Remove cassette controller, turn power on and press PLAY key.
Is take-up normal during playback ?
NO
Go to 2. REC/PLAY FAILURE routine.
YES
Press VSR key. (Turn take-up reel disk by hand.)
Is brake shifter at VSR position ?
NO
Replace brake shifter.
YES
Does idler gear swing toward supply reel disk ?
NO
Replace idler assembly.
YES
Is supply reel disk torque between 140 and 200 g·cm?
NO
Replace supply reel disk.
YES
Check main PWB.


4. UNUSUAL SOUND IN EACH MODE
Insert cassette and press play and STOP keys repeatedly.
Is rattling sound during loading/unloading ?
NO
Replace loading block sub-assembly.
YES
Turn power off and remove cassette controller.
Is reel disk height as specified (using jig) ?
NO
Readjust reel disk height.
YES
Power ON
FF key IN
Is unusual sound heard at FF ?
YES
Turn take-up reel disk slowly with finger. Are take-up reel stopper and PB gear rubbing each other ?
NO
Replace take-up reel stopper.
NO
Press REW key and turn take-up reel disk by hand.
YES
Undo reel belt, turn take-up disk by hand and press FF key.
Is unusual sound heard at REW ?
YES
Is unusual sound heard with capstan DD motor running ?
YES
Replace capstan DD motor.
NO
NO
Move supply reel disk up and down. Is there excessive thrust gap ?
NO
Replace supply reel stopper.
YES
Turn supply reel disk slowly. Is there no rubbing at bottom ?
NO
Replace supply reel disk.
YES
If there is no unusual sound heard again in each mode, go back to the start of routine to recheck.

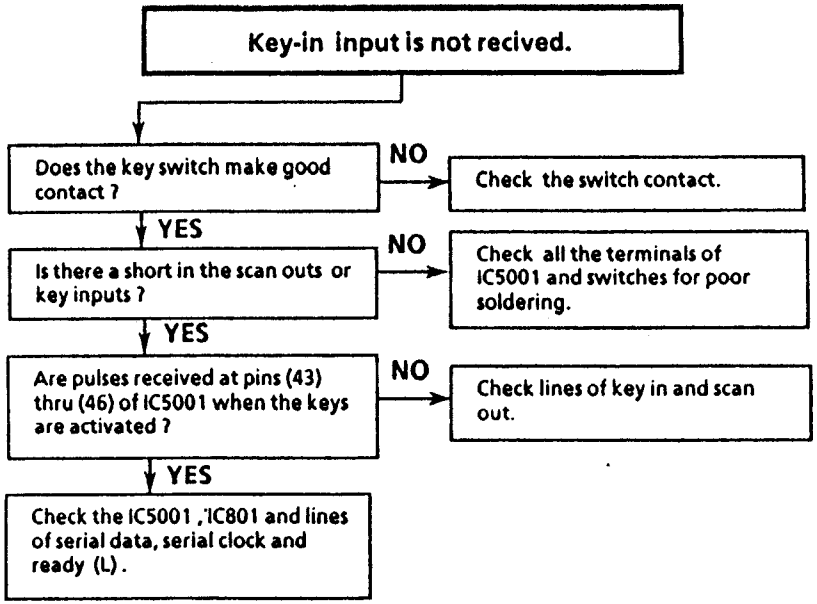
FLOW CHART NO.1 POWER TROUBLESHOOTING


The VCR set fails to work.
Unplug the AC cord. Replug it a few minutes later.
Is the fuse good ? (Located on power module.)
NO
Replace the fuse.
YES
Are M12V,AT9V,UR6.5V,AT32V, AT-33V and filament voltage lines normal ?
NO
Check if there is a short in the main module and trouble in the power unit, etc.
YES
Is the fluorescent display tube illuminated ?
NO
See FLOW CHART NO.2. (TIMER (1) TROUBLESHOOTING)
YES
Are the AT5V and GND lines properly connected with the IC801 ?
NO
Check for poor soldering.
YES
Is there 6.0MHz oscillation at pins(63) and (62)of IC801 ? Also 4.0MHz oscillation at pins(49) and (48) of IC5001 ?
NO
Replace the IC801 and /or X801. IC5001 and/or FL5001.
YES
Does pin (23) of IC801 pin(47)of IC5001 change from "L" to "H" level when the AC cord is plugged in ?
NO
Check the peripheral circuit of IC802. Also check peripheral circuit it of Q5004 and IC5002.
YES
Does pin (48) of IC801 change from "L" to "H" level when the power is turned on?
NO
Check the IC5001, IC801 and lines of serial data, serial clock and ready (L).
YES
Check the power control circuit PC9V REG. and PC5V REG.

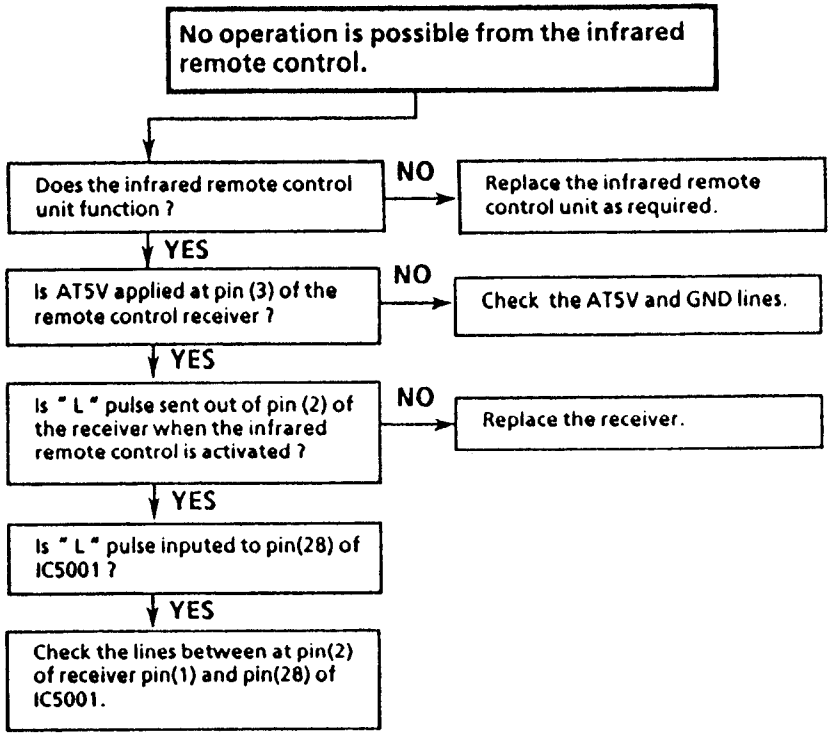
FLOW CHART NO. 2 TIMER (1) TROUBLESHOOTING


The flourescent display tube fails to light up.
Is AT 5V applied at pin (32) of IC5001 ?
NO
Check the AT5V line.
YES
Is AT – 33V applied at pin (19) of IC5001 ?
NO
Check the AT-33V line and power unit.
YES
Is there 4.0MHz oscillation at pins (48) and (49) of IC5001 ?
NO
Check the FL5001 and IC5001.
YES
Does pin (47) of IC5001 change from "L" to "H" level when the AC cord is plugged in ?
NO
Check the peripheral circuit of Q5004 and IC5002.
YES
Is a "H" level at pin (31) of IC5001?
NO
Check "POWER FAIL(L)" line and IC802 the AT5V line.
YES
Is filament voltage applied between (1)/(2) and (31)/(32) of the flourescent display tube ?
NO
Check the power module and peripheral circuit of D954.
YES
Does the flourescent display tube function ?
NO
Check for cracks on the flourescent display tube.
YES
Replace the IC5001.

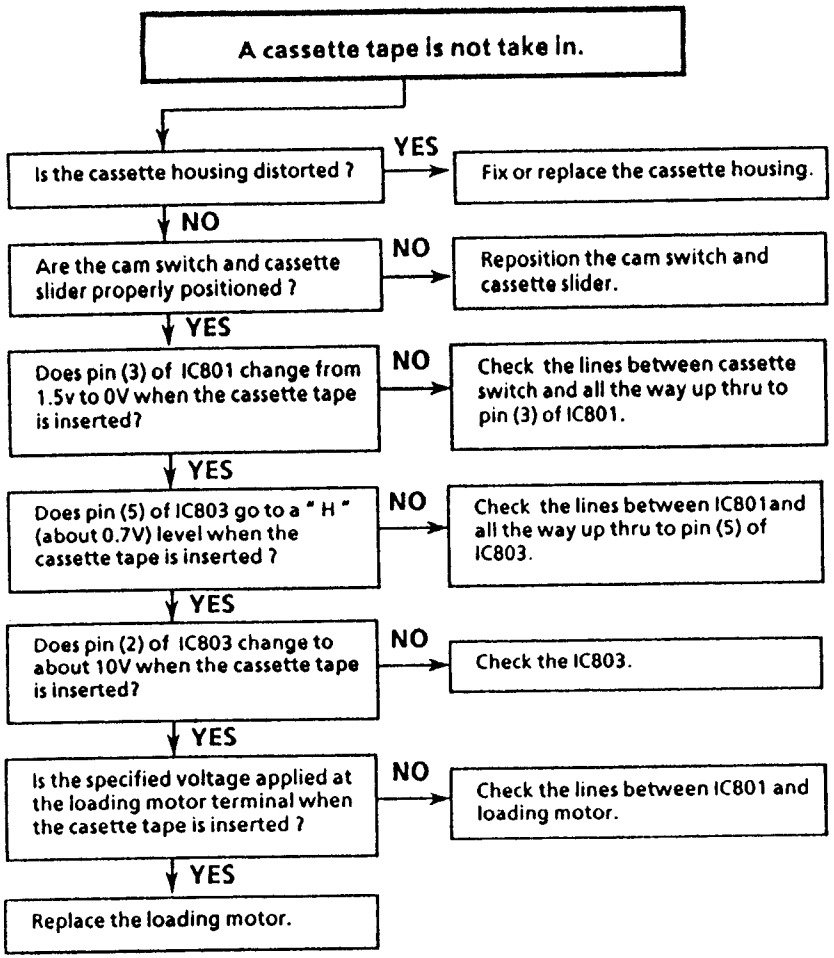
FLOW CHART NO. 3 TIMER (2) TROUBLESHOOTING


Key-in input is not recived.
Does the key switch make good contact ?
NO
Check the switch contact.
YES
Is there a short in the scan outs or key inputs ?
NO
Check all the terminals of IC5001 and switches for poor soldering.
YES
Are pulses received at pins (43) thru (46) of IC5001 when the keys are activated ?
NO
Check lines of key in and scan out.
YES
Check the IC5001 , IC801 and lines of serial data, serial clock and ready (L).

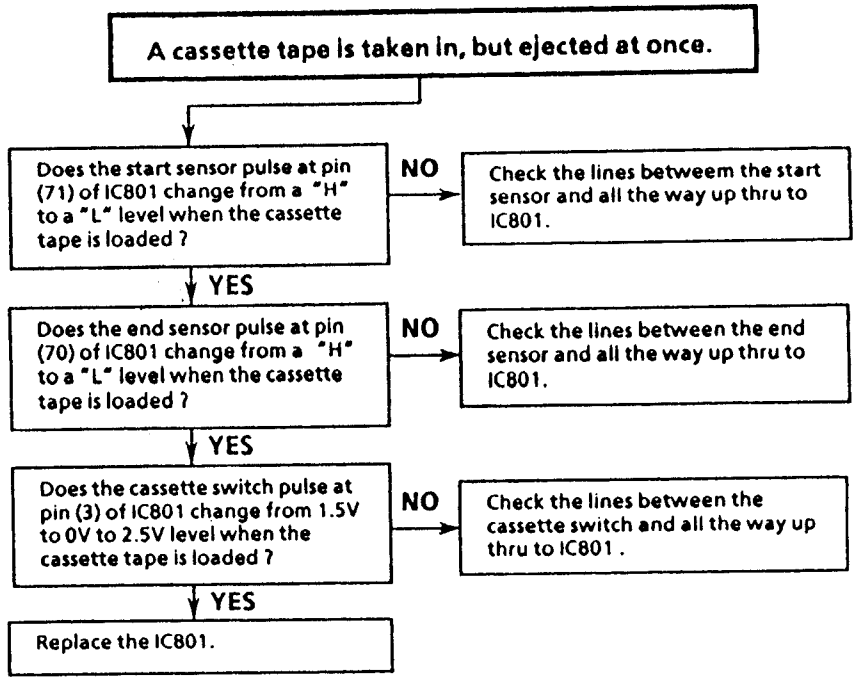
FLOW CHART NO. 4 INFRARED R/C TROUBLESHOOTING


No operation is possible from the infrared remote control.
Does the infrared remote control unit function ?
NO
Replace the infrared remote control unit as required.
YES
Is AT5V applied at pin (3) of the remote control receiver ?
NO
Check the AT5V and GND lines.
YES
Is " L " pulse sent out of pin (2) of the receiver when the infrared remote control is activated ?
NO
Replace the receiver.
YES
Is " L " pulse inputed to pin(28) of IC5001 ?
YES
Check the lines between at pin(2) of receiver pin(1) and pin(28) of IC5001.

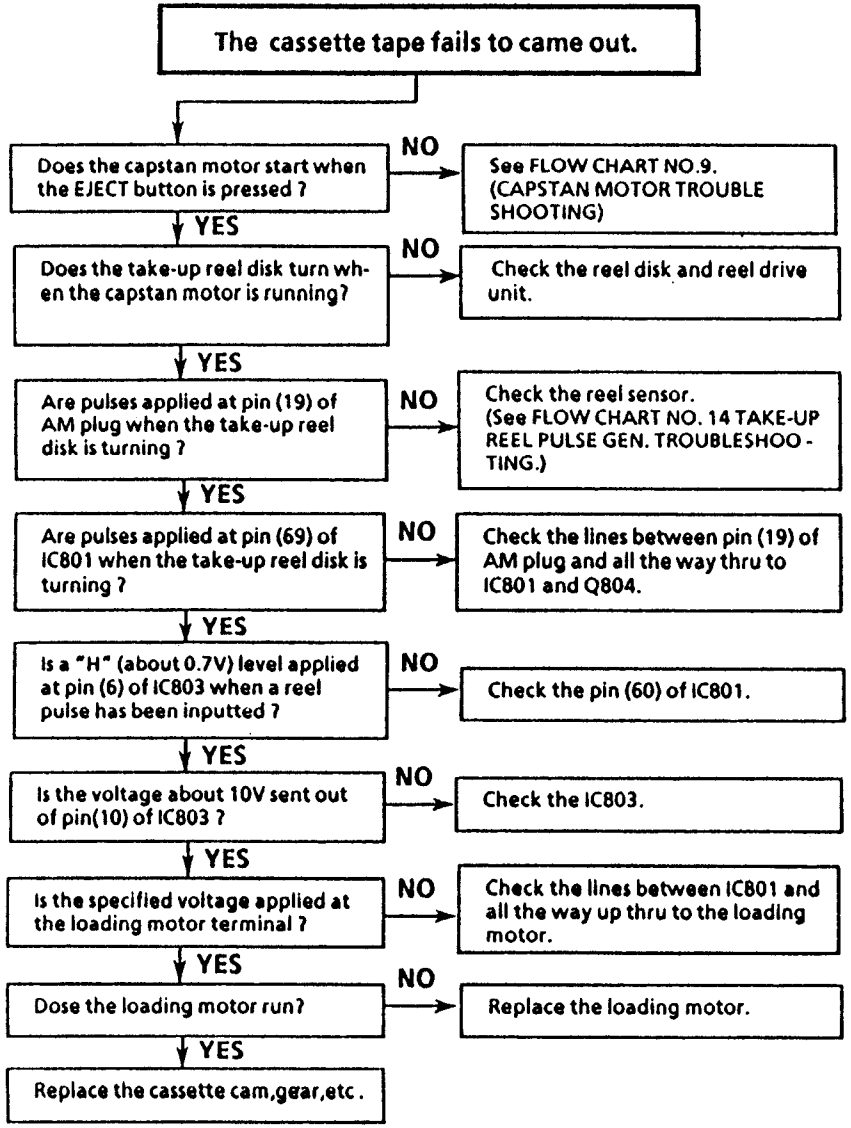
FLOW CHART NO. 5 CASSETTE CONTROL TROUBLESHOOTING (1)


A cassette tape is not take in.
Is the cassette housing distorted ?
YES
Fix or replace the cassette housing.
NO
Are the cam switch and cassette slider properly positioned ?
NO
Reposition the cam switch and cassette slider.
YES
Does pin (3) of IC801 change from 1.5v to 0V when the cassette tape is inserted?
NO
Check the lines between cassette switch and all the way up thru to pin (3) of IC801.
YES
Does pin (5) of IC803 go to a " H " (about 0.7V) level when the cassette tape is inserted ?
NO
Check the lines between IC801and all the way up thru to pin (5) of IC803.
YES
Does pin (2) of IC803 change to about 10V when the cassette tape is inserted?
NO
Check the IC803.
YES
Is the specified voltage applied at the loading motor terminal when the casette tape is inserted ?
NO
Check the lines between IC801 and loading motor.
YES
Replace the loading motor.

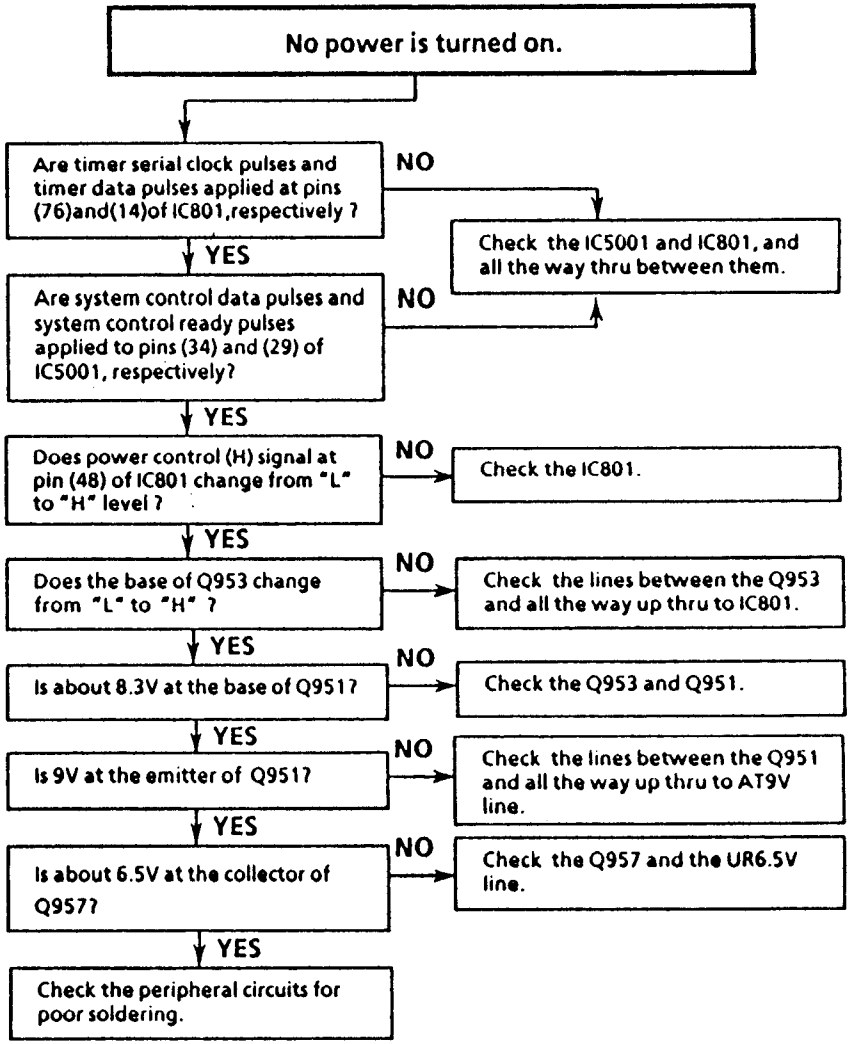
FLOW CHART NO. 6 CASSETTE CONTROL TROUBLESHOOTING (2)


A cassette tape is taken in, but ejected at once.
Does the start sensor pulse at pin (71) of IC801 change from a "H" to a "L" level when the cassette tape is loaded ?
NO
Check the lines betweem the start sensor and all the way up thru to IC801.
YES
Does the end sensor pulse at pin (70) of IC801 change from a "H" to a "L" level when the cassette tape is loaded ?
NO
Check the lines between the end sensor and all the way up thru to IC801.
YES
Does the cassette switch pulse at pin (3) of IC801 change from 1.5V to 0V to 2.5V level when the cassette tape is loaded ?
NO
Check the lines between the cassette switch and all the way up thru to IC801 .
YES
Replace the IC801.

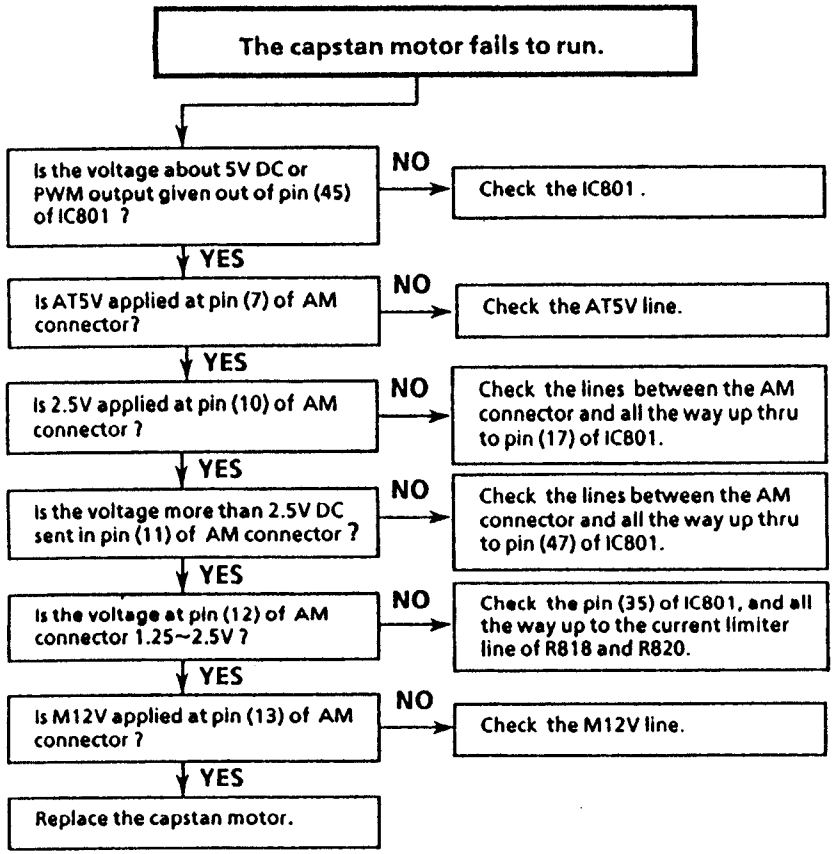
FLOW CHART NO. 7 LOADING MOTOR AND EJECT TROUBLESHOOTING


The cassette tape fails to came out.
Does the capstan motor start when the EJECT button is pressed ?
NO
See FLOW CHART NO.9. (CAPSTAN MOTOR TROUBLE SHOOTING)
YES
Does the take-up reel disk turn when the capstan motor is running?
NO
Check the reel disk and reel drive unit.
YES
Are pulses applied at pin (19) of AM plug when the take-up reel disk is turning ?
NO
Check the reel sensor. (See FLOW CHART NO. 14 TAKE-UP REEL PULSE GEN. TROUBLESHOOTING.)
YES
Are pulses applied at pin (69) of IC801 when the take-up reel disk is turning ?
NO
Check the lines between pin (19) of AM plug and all the way thru to IC801 and Q804.
YES
Is a "H" (about 0.7V) level applied at pin (6) of IC803 when a reel pulse has been inputted ?
NO
Check the pin (60) of IC801.
YES
Is the voltage about 10V sent out of pin(10) of IC803 ?
NO
Check the IC803.
YES
Is the specified voltage applied at the loading motor terminal ?
NO
Check the lines between IC801 and all the way up thru to the loading motor.
YES
Dose the loading motor run?
NO
Replace the loading motor.
YES
Replace the cassette cam,gear,etc.

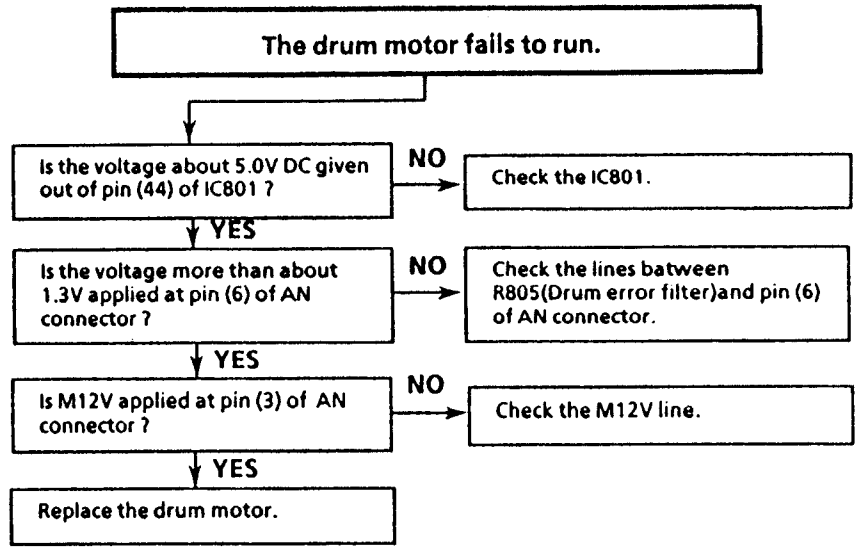
FLOW CHART NO. 8 SYSTEM CONTROL TROUBLESHOOTING


No power is turned on.
Are timer serial clock pulses and timer data pulses applied at pins (76)and(14)of IC801,respectively ?
NO
Check the IC5001 and IC801, and all the way thru between them.
YES
Are system control data pulses and system control ready pulses applied to pins (34) and (29) of IC5001, respectively?
NO
YES
Does power control (H) signal at pin (48) of IC801 change from "L" to "H" level ?
NO
Check the IC801.
YES
Does the base of Q953 change from "L" to "H" ?
NO
Check the lines between the Q953 and all the way up thru to IC801.
YES
Is about 8.3V at the base of Q951?
NO
Check the Q953 and Q951.
YES
Is 9V at the emitter of Q951?
NO
Check the lines between the Q951 and all the way up thru to AT9V line.
YES
Is about 6.5V at the collector of Q957?
NO
Check the Q957 and the UR6.5V line.
YES
Check the peripheral circuits for poor soldering.

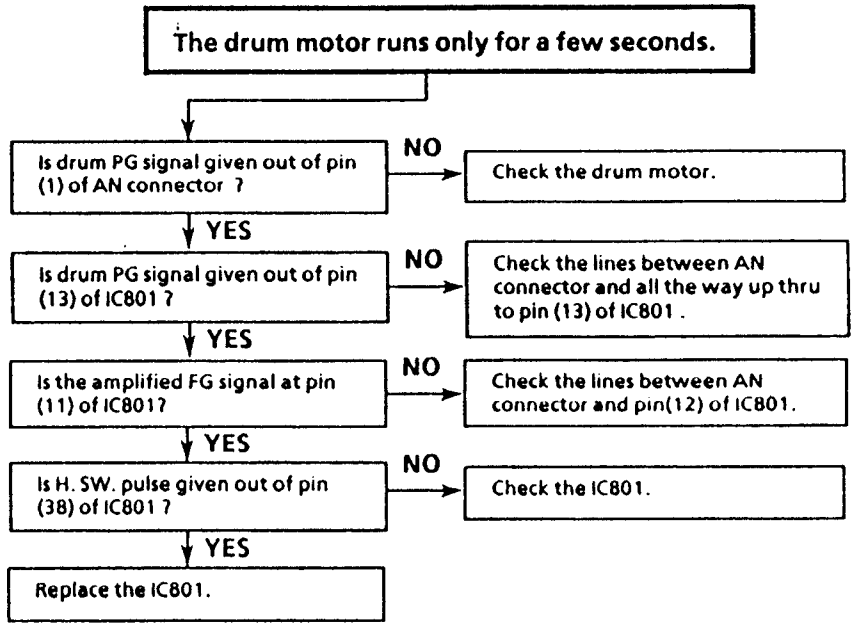
FLOW CHART NO. 9 CAPSTAN MOTOR TROUBLESHOOTING


The capstan motor fails to run.
Is the voltage about 5V DC or PWM output given out of pin (45) of IC801 ?
NO
Check the IC801 .
YES
Is AT5V applied at pin (7) of AM connector?
NO
Check the AT5V line.
YES
Is 2.5V applied at pin (10) of AM connector ?
NO
Check the lines between the AM connector and all the way up thru to pin (17) of IC801.
YES
Is the voltage more than 2.5V DC sent in pin (11) of AM connector ?
NO
Check the lines between the AM connector and all the way up thru to pin (47) of IC801.
YES
Is the voltage at pin (12) of AM connector 1.25~2.5V ?
NO
Check the pin (35) of IC801, and all the way up to the current limiter line of R818 and R820.
YES
Is M12V applied at pin (13) of AM connector ?
NO
Check the M12V line.
YES
Replace the capstan motor.

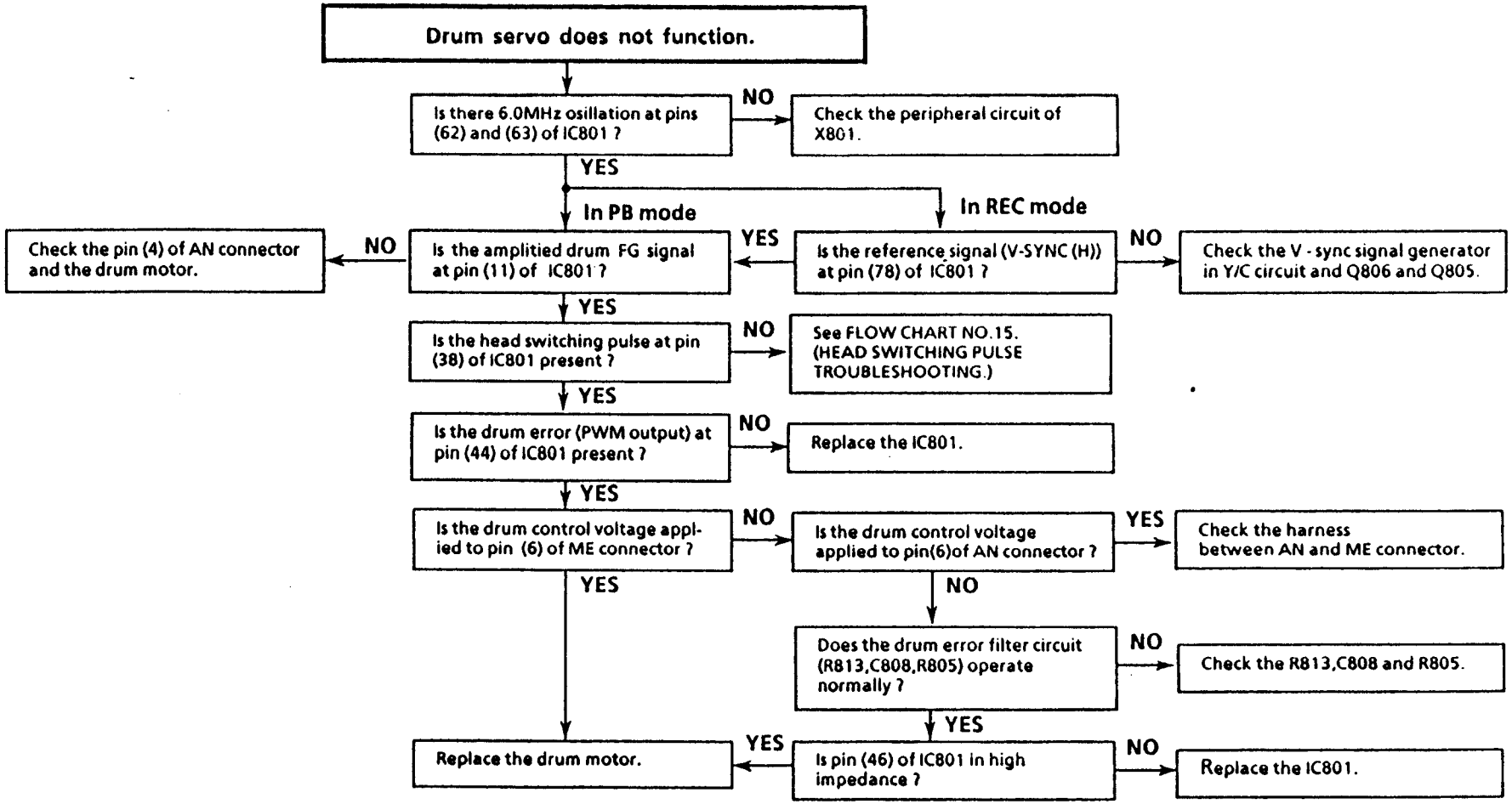
FLOW CHART NO. 10 DRUM MOTOR TROUBLESHOOTING (1)


The drum motor fails to run.
Is the voltage about 5.0V DC given out of pin (44) of IC801 ?
NO
Check the IC801.
YES
Is the voltage more than about 1.3V applied at pin (6) of AN connector ?
NO
Check the lines batween R805(Drum error filter)and pin (6) of AN connector.
YES
Is M12V applied at pin (3) of AN connector ?
NO
Check the M12V line.
YES
Replace the drum motor.

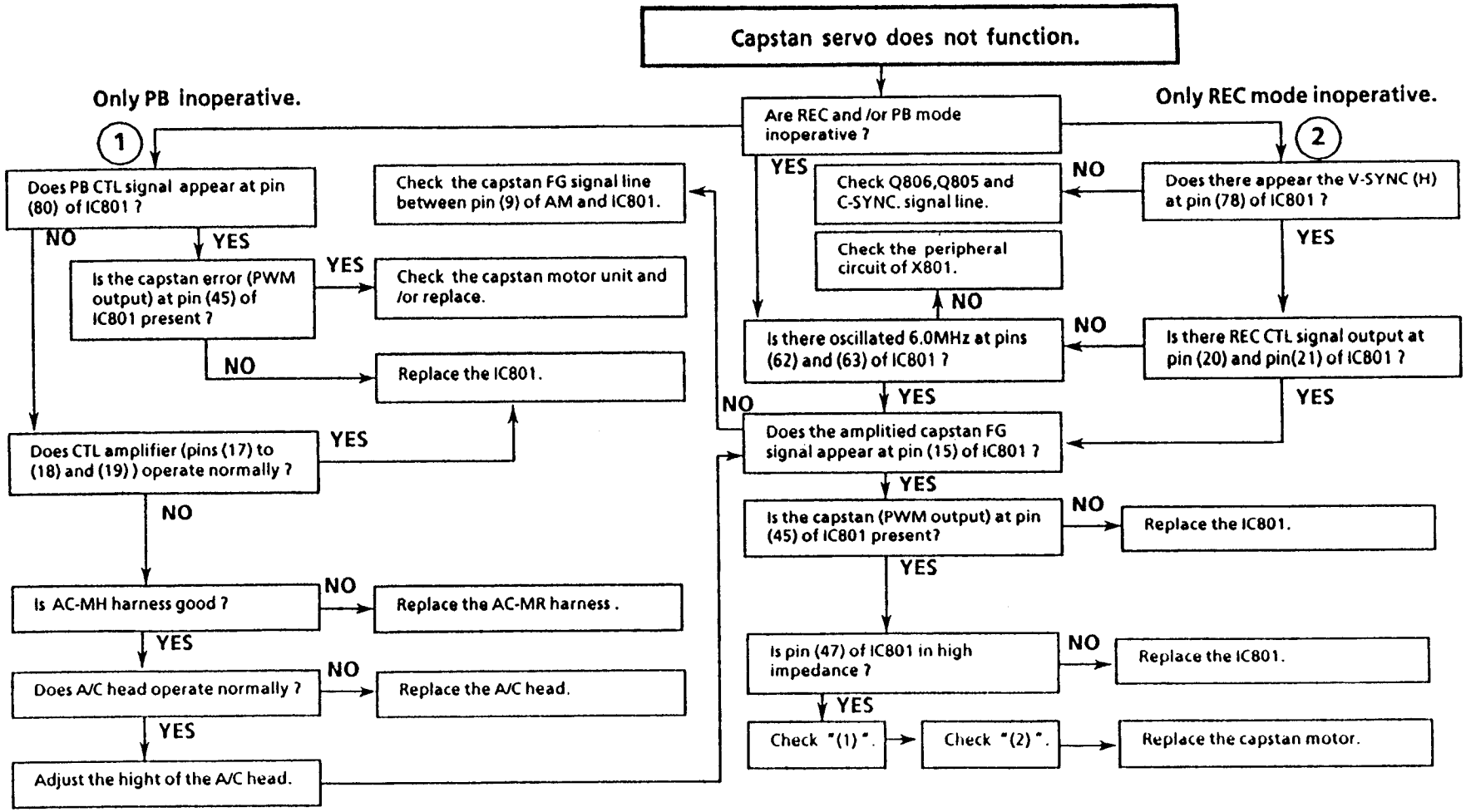
FLOW CHART NO. 11 DRUM MOTOR TROUBLESHOOTING (2)


The drum motor runs only for a few seconds.
Is drum PG signal given out of pin (1) of AN connector ?
NO
Check the drum motor.
YES
Is drum PG signal given out of pin (13) of IC801 ?
NO
Check the lines between AN connector and all the way up thru to pin (13) of IC801 .
YES
Is the amplified FG signal at pin (11) of IC801?
NO
Check the lines between AN connector and pin(12) of IC801.
YES
Is H. SW. pulse given out of pin (38) of IC801 ?
NO
Check the IC801.
YES
Replace the IC801.

FLOW CHART NO. 12 DRUM SERVO TROUBLESHOOTING


Drum servo does not function.
Is there 6.0MHz osillation at pins (62) and (63) of IC801 ?
NO
Check the peripheral circuit of X801.
YES
In PB mode
In REC mode
Check the pin (4) of AN connector and the drum motor.
NO
Is the amplitied drum FG signal at pin (11) of IC801 ?
YES
Is the reference signal (V-SYNC (H)) at pin (78) of IC801 ?
NO
Check the V - sync signal generator in Y/C circuit and Q806 and Q805.
YES
Is the head switching pulse at pin (38) of IC801 present ?
NO
See FLOW CHART NO.15. (HEAD SWITCHING PULSE TROUBLESHOOTING.)
YES
Is the drum error (PWM output) at pin (44) of IC801 present ?
NO
Replace the IC801.
YES
Is the drum control voltage applied to pin (6) of ME connector ?
NO
Is the drum control voltage applied to pin(6)of AN connector ?
YES
Check the harness between AN and ME connector.
YES
NO
Does the drum error filter circuit (R813,C808,R805) operate normally ?
NO
Check the R813,C808 and R805.
YES
Replace the drum motor.
YES
Is pin (46) of IC801 in high impedance ?
NO
Replace the IC801.

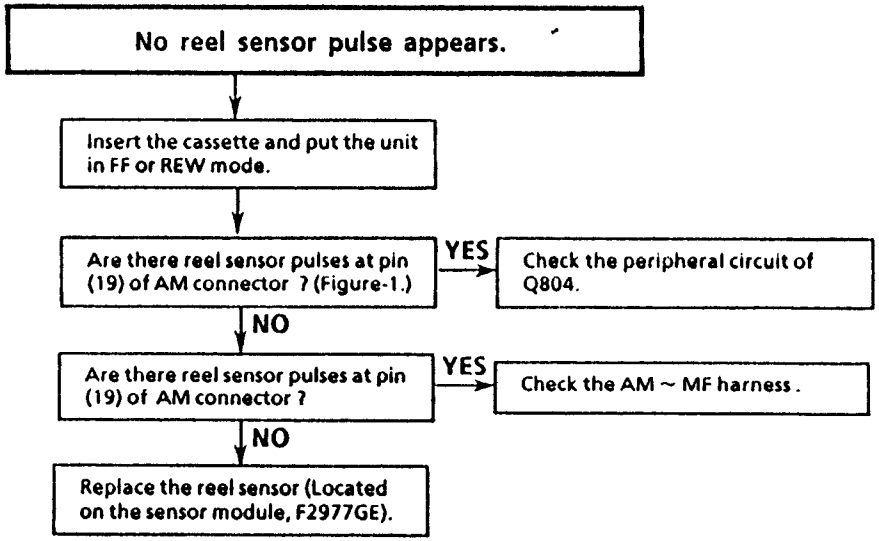
FLOW CHART NO.13 CAPSTAN SERVO TROUBLESHOOTING


Capstan servo does not function.
Are REC and /or PB mode inoperative ?
Only PB inoperative.
Only REC mode inoperative.
1
2
Does PB CTL signal appear at pin (80) of IC801 ?
Check the capstan FG signal line between pin (9) of AM and IC801.
Is the capstan error (PWM output) at pin (45) of IC801 present ?
Check the capstan motor unit and /or replace.
Replace the IC801.
Does CTL amplifier (pins (17) to (18) and (19)) operate normally ?
Is AC-MH harness good ?
Replace the AC-MR harness .
Does A/C head operate normally ?
Replace the A/C head.
Adjust the hight of the A/C head.
Check Q806,Q805 and C-SYNC. signal line.
Check the peripheral circuit of X801.
Does there appear the V-SYNC (H) at pin (78) of IC801 ?
Is there oscillated 6.0MHz at pins (62) and (63) of IC801 ?
Is there REC CTL signal output at pin (20) and pin(21) of IC801 ?
Does the amplitied capstan FG signal appear at pin (15) of IC801 ?
Is the capstan (PWM output) at pin (45) of IC801 present?
Replace the IC801.
Is pin (47) of IC801 in high impedance ?
Replace the IC801.
Check "(1)".
Check "(2)".
Replace the capstan motor.
YES
NO

FLOW CHART NO. 14 TAKE-UP REEL PULSE GENERATOR TROUBLESHOOTING.

Note:

Continued to FLOW CHART NO. 7 LOADING MOTOR AND EJECT TROUBLESHOOTING


No reel sensor pulse appears.
Insert the cassette and put the unit in FF or REW mode.
Are there reel sensor pulses at pin (19) of AM connector ? (Figure-1.)
YES
Check the peripheral circuit of Q804.
NO
Are there reel sensor pulses at pin (19) of AM connector ?
YES
Check the AM ~ MF harness .
NO
Replace the reel sensor (Located on the sensor module, F2977GE).

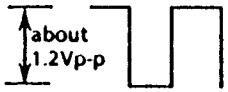
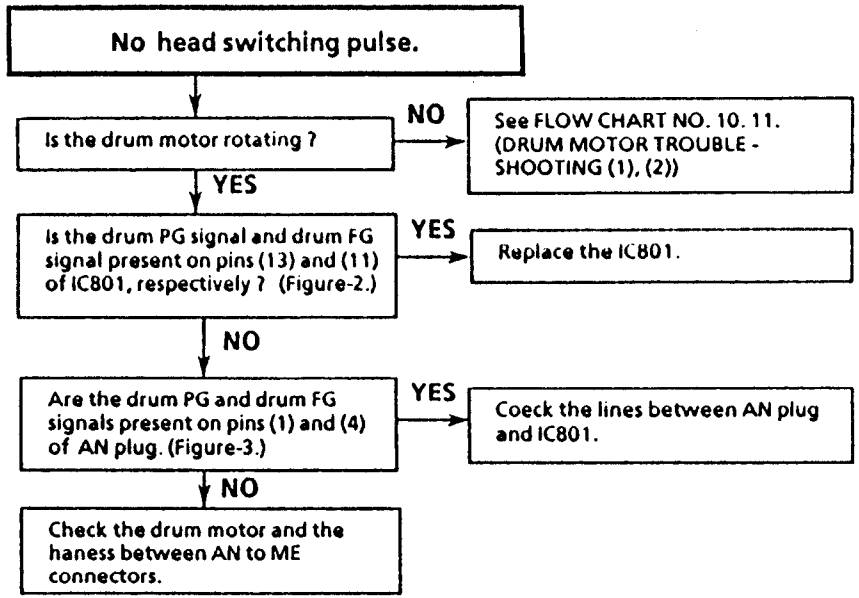


Figure-1.

FLOW CHART NO. 15 HEAD SWITCHING PULSE TROUBLESHOOTING.

Note:

Continued to FLOW CHART NO. 12 DRUM SERVO TROUBLESHOOTING


No head switching pulse.
Is the drum motor rotating ?
NO
See FLOW CHART NO. 10. 11. (DRUM MOTOR TROUBLE - SHOOTING (1), (2))
YES
Is the drum PG signal and drum FG signal present on pins (13) and (11) of IC801, respectively ? (Figure-2.)
YES
Replace the IC801.
NO
Are the drum PG and drum FG signals present on pins (1) and (4) of AN plug. (Figure-3.)
YES
Coeck the lines between AN plug and IC801.
NO
Check the drum motor and the haness between AN to ME connectors.

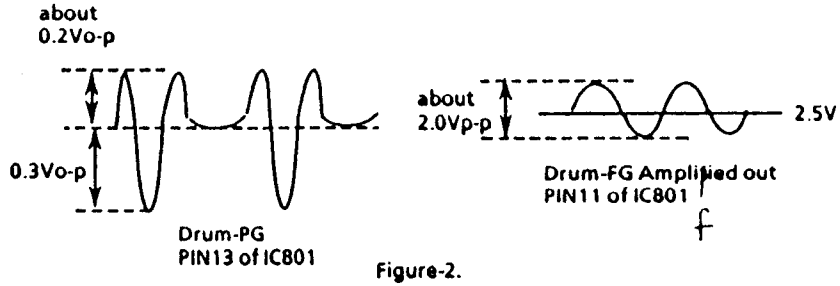


Figure-2.

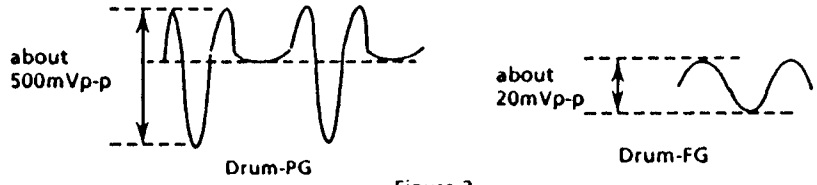
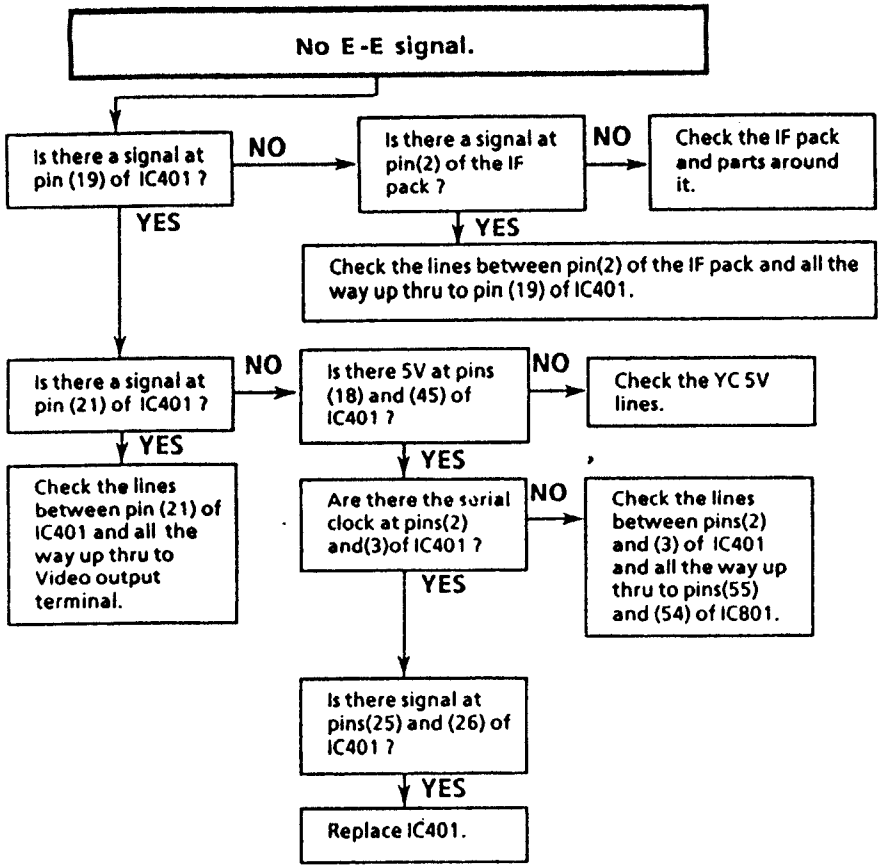
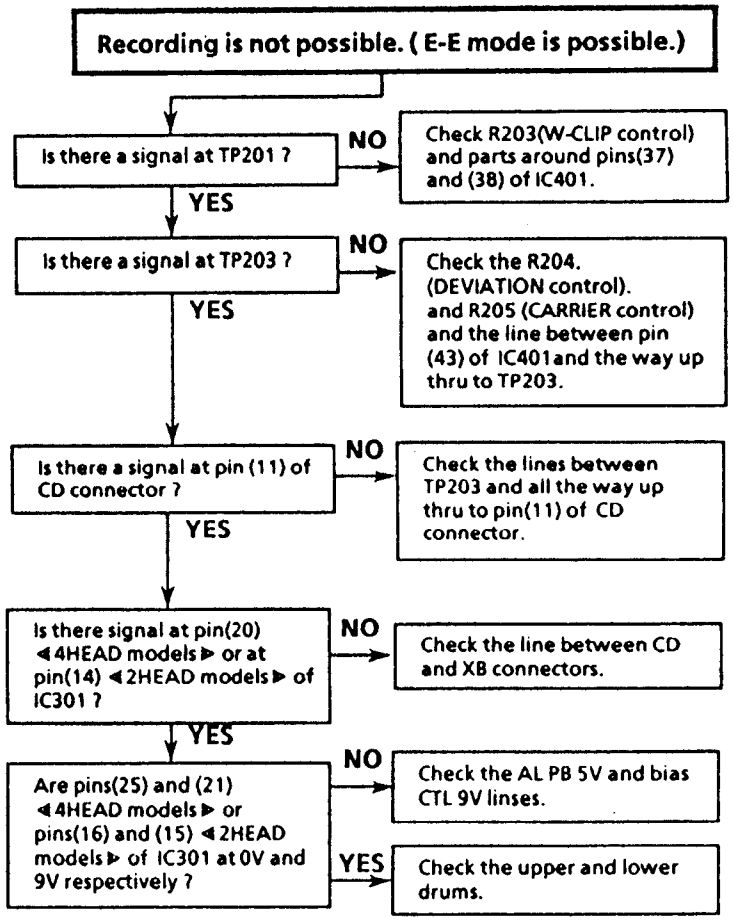


Figure-3.

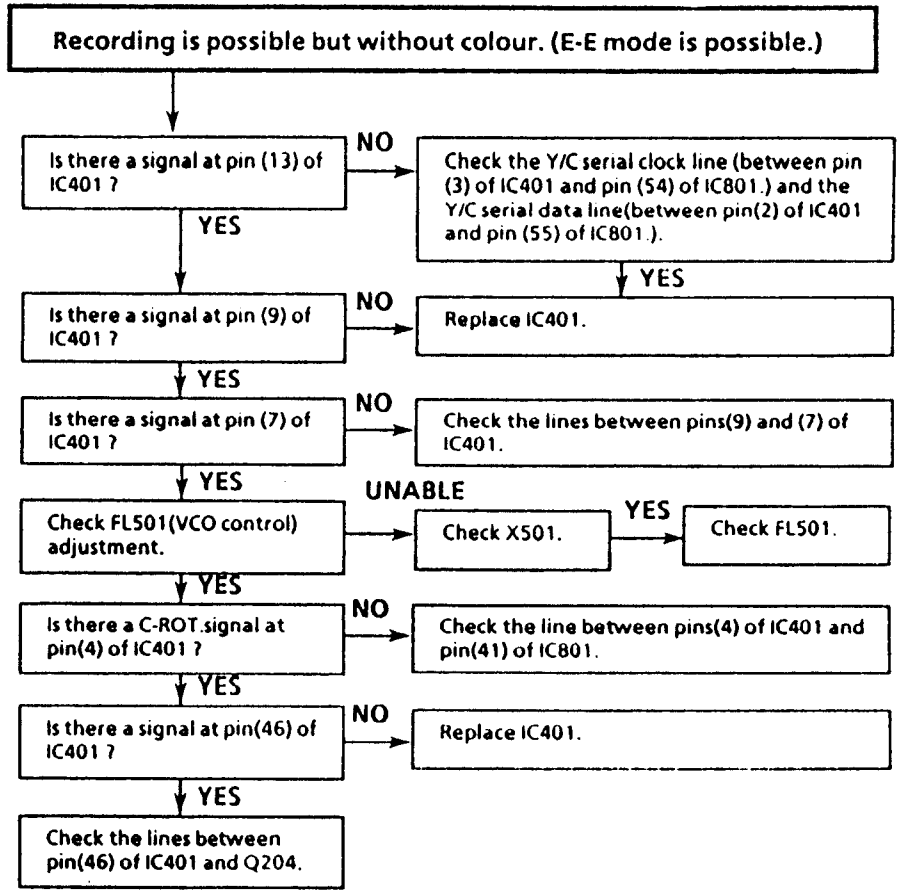
FLOW CHART NO. 16 E-E MODE TROUBLESHOOTING


No E-E signal.
Is there a signal at pin (19) of IC401 ?
NO
Is there a signal at pin(2) of the IF pack ?
NO
Check the IF pack and parts around it.
YES
YES
Check the lines between pin(2) of the IF pack and all the way up thru to pin (19) of IC401.
Is there a signal at pin (21) of IC401 ?
NO
Is there 5V at pins (18) and (45) of IC401 ?
NO
Check the YC 5V lines.
YES
YES
Check the lines between pin (21) of IC401 and all the way up thru to Video output terminal.
Are there the serial clock at pins(2) and(3)of IC401 ?
NO
Check the lines between pins(2) and (3) of IC401 and all the way up thru to pins(55) and (54) of IC801.
YES
Is there signal at pins(25) and (26) of IC401 ?
YES
Replace IC401.

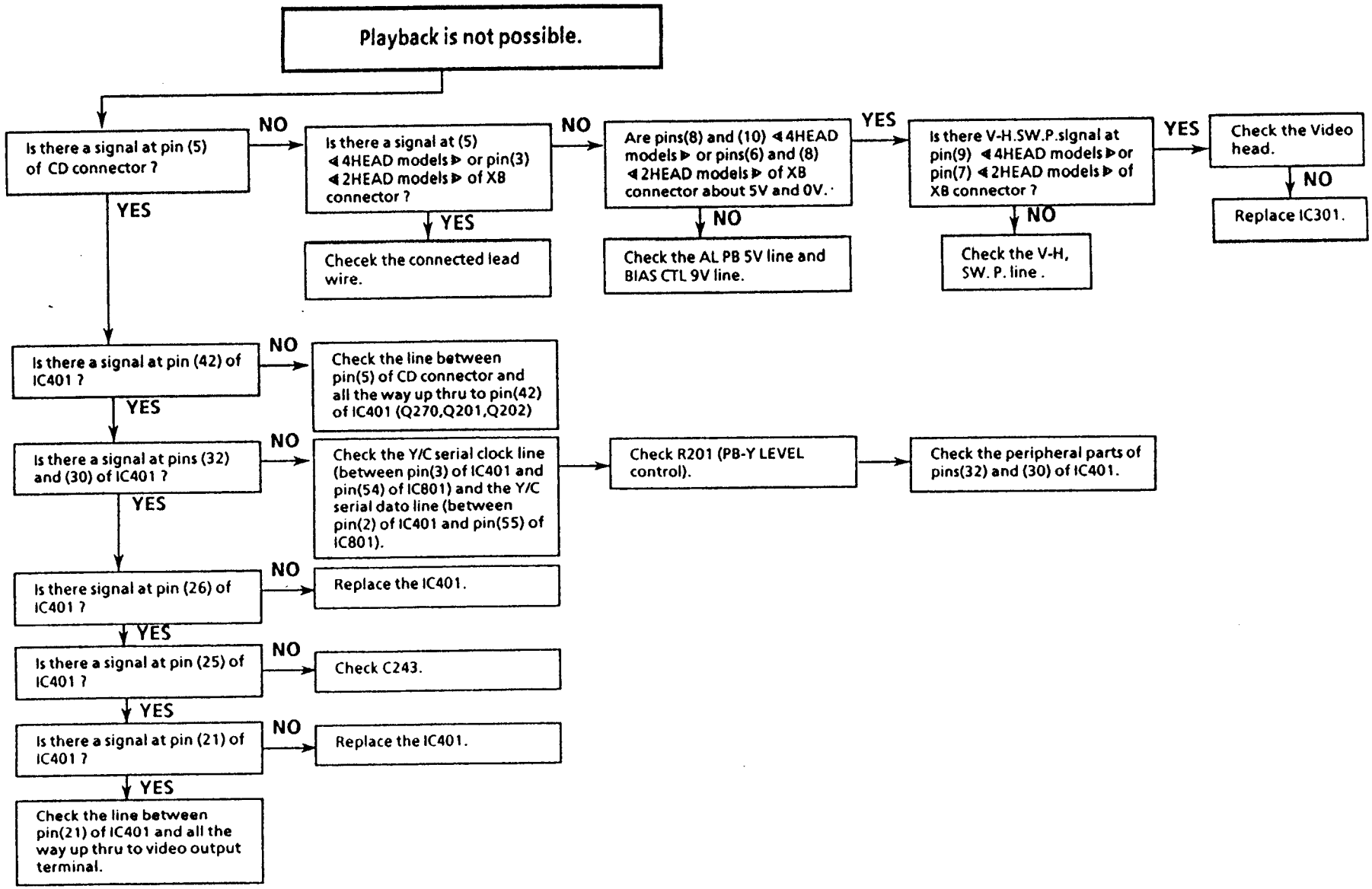
FLOW CHART NO. 17 RECORDING MODE (LUMINANCE) TROUBLESHOOTING


Recording is not possible. (E-E mode is possible.)
Is there a signal at TP201 ?
NO
Check R203(W-CLIP control) and parts around pins(37) and (38) of IC401.
YES
Is there a signal at TP203 ?
NO
Check the R204. (DEVIATION control). and R205 (CARRIER control) and the line between pin (43) of IC401and the way up thru to TP203.
YES
Is there a signal at pin (11) of CD connector ?
NO
Check the lines between TP203 and all the way up thru to pin(11) of CD connector.
YES
Is there signal at pin(20) ◀4HEAD models▶ or at pin(14) ◀2HEAD models▶ of IC301 ?
NO
Check the line between CD and XB connectors.
YES
Are pins(25) and (21) ◀4HEAD models▶ or pins(16) and (15) ◀2HEAD models▶ of IC301 at 0V and 9V respectively ?
NO
Check the AL PB 5V and bias CTL 9V linses.
YES
Check the upper and lower drums.

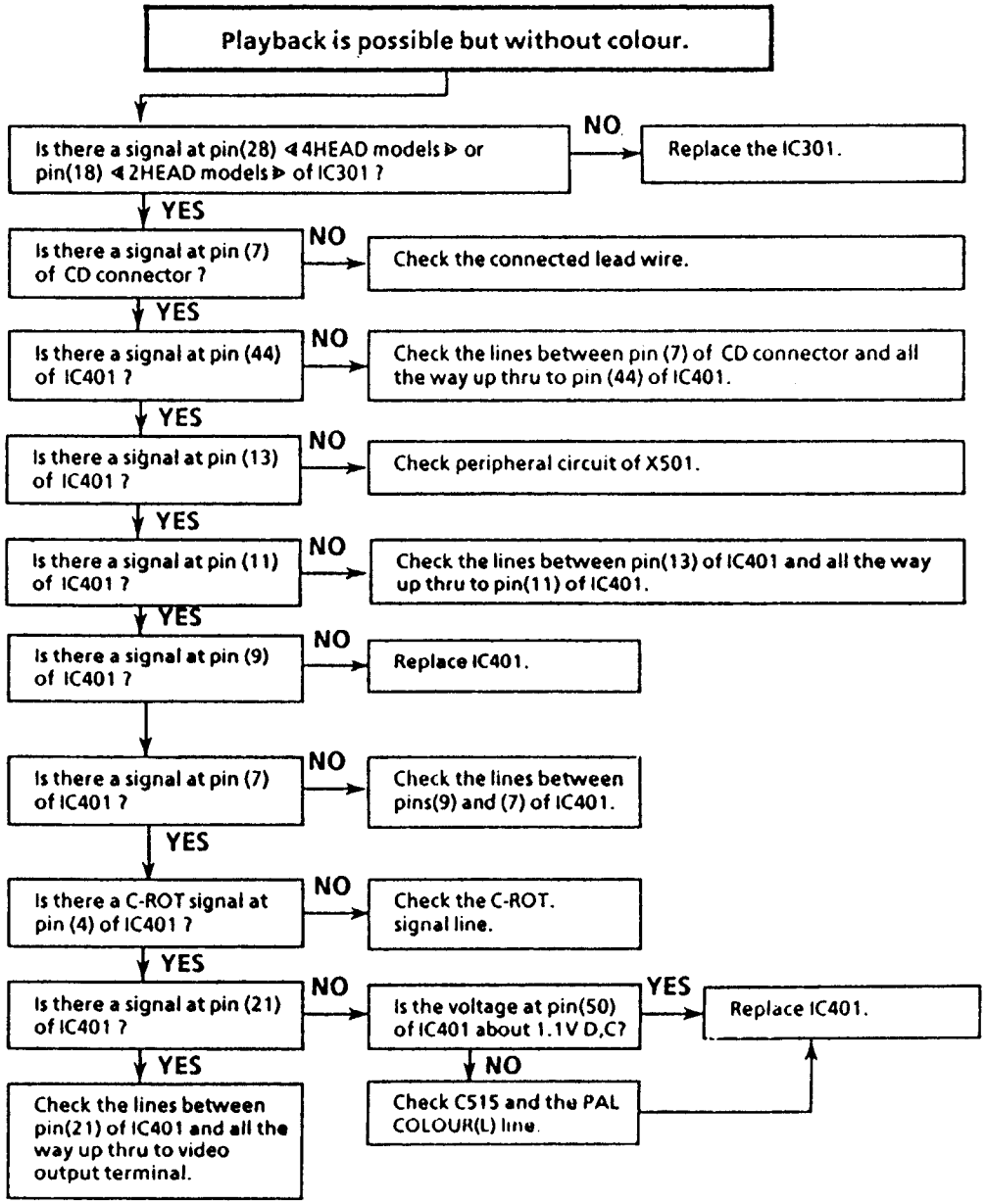
FLOW CHART NO. 18 RECORDING MODE (CHROMA) TROUBLESHOOTING


Recording is possible but without colour. (E-E mode is possible.)
Is there a signal at pin (13) of IC401 ?
NO
Check the Y/C serial clock line (between pin (3) of IC401 and pin (54) of IC801.) and the Y/C serial data line(between pin(2) of IC401 and pin (55) of IC801.).
YES
YES
Is there a signal at pin (9) of IC401 ?
NO
Replace IC401.
YES
Is there a signal at pin (7) of IC401 ?
NO
Check the lines between pins(9) and (7) of IC401.
YES
UNABLE
Check FL501(VCO control) adjustment.
Check X501.
YES
Check FL501.
YES
Is there a C-ROT.signal at pin(4) of IC401 ?
NO
Check the line between pins(4) of IC401 and pin(41) of IC801.
YES
Is there a signal at pin(46) of IC401 ?
NO
Replace IC401.
YES
Check the lines between pin(46) of IC401 and Q204.

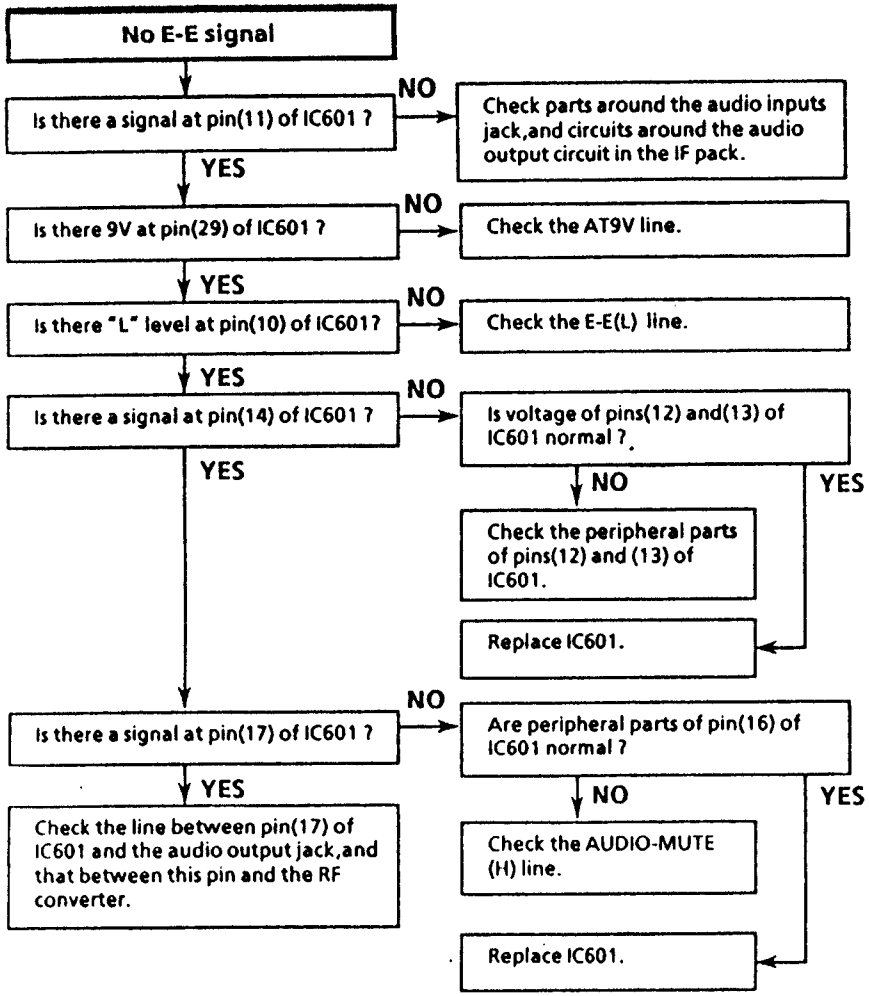
FLOW CHART NO. 19 PLAYBACK MODE (LUMINANCE) TROUBLESHOOTING


Playback is not possible.
Is there a signal at pin (5) of CD connector ?
NO
Is there a signal at (5) ◀4HEAD models▶ or pin(3) ◀2HEAD models▶ of XB connector ?
NO
Are pins(8) and (10) ◀4HEAD models▶ or pins(6) and (8) ◀2HEAD models▶ of XB connector about 5V and 0V.
YES
Is there V-H.SW.P.signal at pin(9) ◀4HEAD models▶ or pin(7) ◀2HEAD models▶ of XB connector ?
YES
Check the Video head.
NO
Replace IC301.
YES
Checek the connected lead wire.
NO
Check the AL PB 5V line and BIAS CTL 9V line.
NO
Check the V-H, SW. P. line .
YES
Is there a signal at pin (42) of IC401 ?
NO
Check the line between pin(5) of CD connector and all the way up thru to pin(42) of IC401 (Q270,Q201,Q202)
YES
Is there a signal at pins (32) and (30) of IC401 ?
NO
Check the Y/C serial clock line (between pin(3) of IC401 and pin(54) of IC801) and the Y/C serial dato line (between pin(2) of IC401 and pin(55) of IC801).
Check R201 (PB-Y LEVEL control).
Check the peripheral parts of pins(32) and (30) of IC401.
YES
Is there signal at pin (26) of IC401 ?
NO
Replace the IC401.
YES
Is there a signal at pin (25) of IC401 ?
NO
Check C243.
YES
Is there a signal at pin (21) of IC401 ?
NO
Replace the IC401.
YES
Check the line between pin(21) of IC401 and all the way up thru to video output terminal.

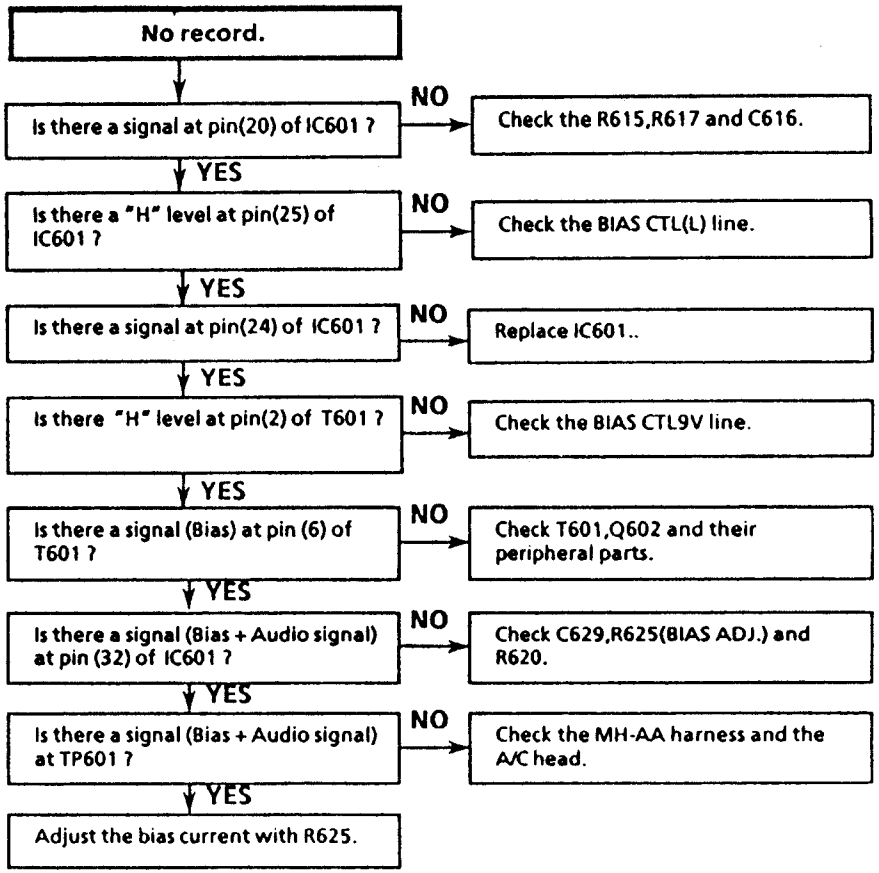
FLOW CHART NO. 20 PLAYBACK MODE (CHROMINANCE) TROUBLESHOOTING


Playback is possible but without colour.
Is there a signal at pin(28) ◀4HEAD models▶ or pin(18) ◀2HEAD models▶ of IC301 ?
NO
Replace the IC301.
YES
Is there a signal at pin (7) of CD connector ?
NO
Check the connected lead wire.
YES
Is there a signal at pin (44) of IC401 ?
NO
Check the lines between pin (7) of CD connector and all the way up thru to pin (44) of IC401.
YES
Is there a signal at pin (13) of IC401 ?
NO
Check peripheral circuit of X501.
YES
Is there a signal at pin (11) of IC401 ?
NO
Check the lines between pin(13) of IC401 and all the way up thru to pin(11) of IC401.
YES
Is there a signal at pin (9) of IC401 ?
NO
Replace IC401.
Is there a signal at pin (7) of IC401 ?
NO
Check the lines between pins(9) and (7) of IC401.
YES
Is there a C-ROT signal at pin (4) of IC401 ?
NO
Check the C-ROT. signal line.
YES
Is there a signal at pin (21) of IC401 ?
NO
Is the voltage at pin(50) of IC401 about 1.1V D.C?
YES
Replace IC401.
YES
NO
Check C515 and the PAL COLOUR(L) line.
Check the lines between pin(21) of IC401 and all the way up thru to video output terminal.

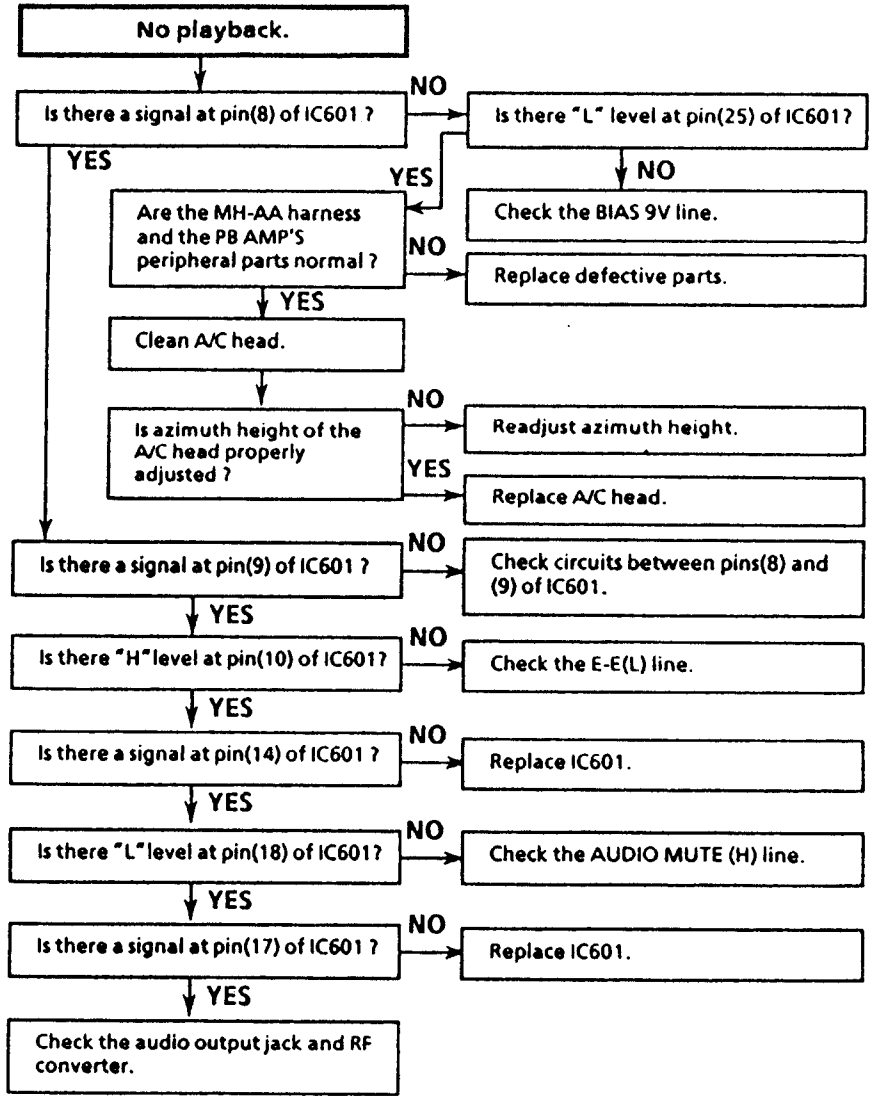
FLOW CHART NO. 21 LINEAR SOUND E-E MODE TROUBLESHOOTING


No E-E signal
Is there a signal at pin(11) of IC601 ?
NO
Check parts around the audio inputs jack,and circuits around the audio output circuit in the IF pack.
YES
Is there 9V at pin(29) of IC601 ?
NO
Check the AT9V line.
YES
Is there "L" level at pin(10) of IC601?
NO
Check the E-E(L) line.
YES
Is there a signal at pin(14) of IC601 ?
NO
Is voltage of pins(12) and(13) of IC601 normal ?
NO
YES
Check the peripheral parts of pins(12) and (13) of IC601.
Replace IC601.
YES
Is there a signal at pin(17) of IC601 ?
NO
Are peripheral parts of pin(16) of IC601 normal ?
NO
YES
YES
Check the line between pin(17) of IC601 and the audio output jack,and that between this pin and the RF converter.
Check the AUDIO-MUTE (H) line.
Replace IC601.

FLOW CHART NO. 22 LINEAR SOUND RECORDING MODE TROUBLESHOOTING


No record.
Is there a signal at pin(20) of IC601 ?
NO
Check the R615,R617 and C616.
YES
Is there a "H" level at pin(25) of IC601 ?
NO
Check the BIAS CTL(L) line.
YES
Is there a signal at pin(24) of IC601 ?
NO
Replace IC601..
YES
Is there "H" level at pin(2) of T601 ?
NO
Check the BIAS CTL9V line.
YES
Is there a signal (Bias) at pin (6) of T601 ?
NO
Check T601,Q602 and their peripheral parts.
YES
Is there a signal (Bias + Audio signal) at pin (32) of IC601 ?
NO
Check C629,R625(BIAS ADJ.) and R620.
YES
Is there a signal (Bias + Audio signal) at TP601 ?
NO
Check the MH-AA harness and the A/C head.
YES
Adjust the bias current with R625.

FLOW CHART NO. 23 LINEAR SOUND PLAYBACK MODE TROUBLESHOOTING



REPLACEMENT OF TIMER IC5003 (E^2PROM)

<Servicing precautions>
When the IC5003 E^2PROM (VHILE93C46S-1, VHIST93C46A-1) in the timer module has been replaced, make the following reprogramming.
Depending on models, the IC5003 E^2PROM has been factory-adjusted for its memory function.
It is therefore necessary to reprogram the memory function for the model in question.
Note that the servo circuit requires readjustments for the slow and still models.

- Memory function reprogramming.

1. Press the OPERATE button to turn the power on.
2. Make the cathode of the timer D5001 and R5001 (pin (46) side of IC5001) on timer module short circuited. (Be sure that all the fluorescent display tubes light up into the test mode.)
3. Remove short circuited in step 2.
4. Press the CHANNEL SET button to get the unit in the CHANNEL SET mode.
5. Using the CHANNEL (+) and (-) buttons,select the right function numbers from among I48-I63, which appear in the flourescent display tube, referring to the E^2PROM map.
   Press the DISPLAY button to pick up the functions (ON) and the CLEAR button to discard the functions (OFF).
   DISPLAY and CLEAR buttons, are located on the remote control unit.
   * When the DISPLAY button has been pressed (ON), the memory function No. starts flashing.
   * When the CLEAR button has been pressed (OFF), the memory function No.lights up.
6. Press the CHANNEL SET button to clear the CHANNEL SET mode.
7. Make the cathode of the timer D5004 and R5004 (pin (43) side of IC5001) on timer module short circuited, and the settings will be displayed in hexadecimal notation.
   Now you can see if the settings are correct.

Example: "ON" and "OFF" are taken as "1" and "0" respectively.
The numbers I48 to I63 are divided into four groups and each group's setting is displayed in hexadecimal notation.

I63	I62	I61	I60	I59	I58	I57	I56	I55	I54	I53	I52	I51	I50	I49	I48
0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		⇩				⇩				⇩				⇩	
		4				2				0				0	

"4200" appears in the flourescent display tube.

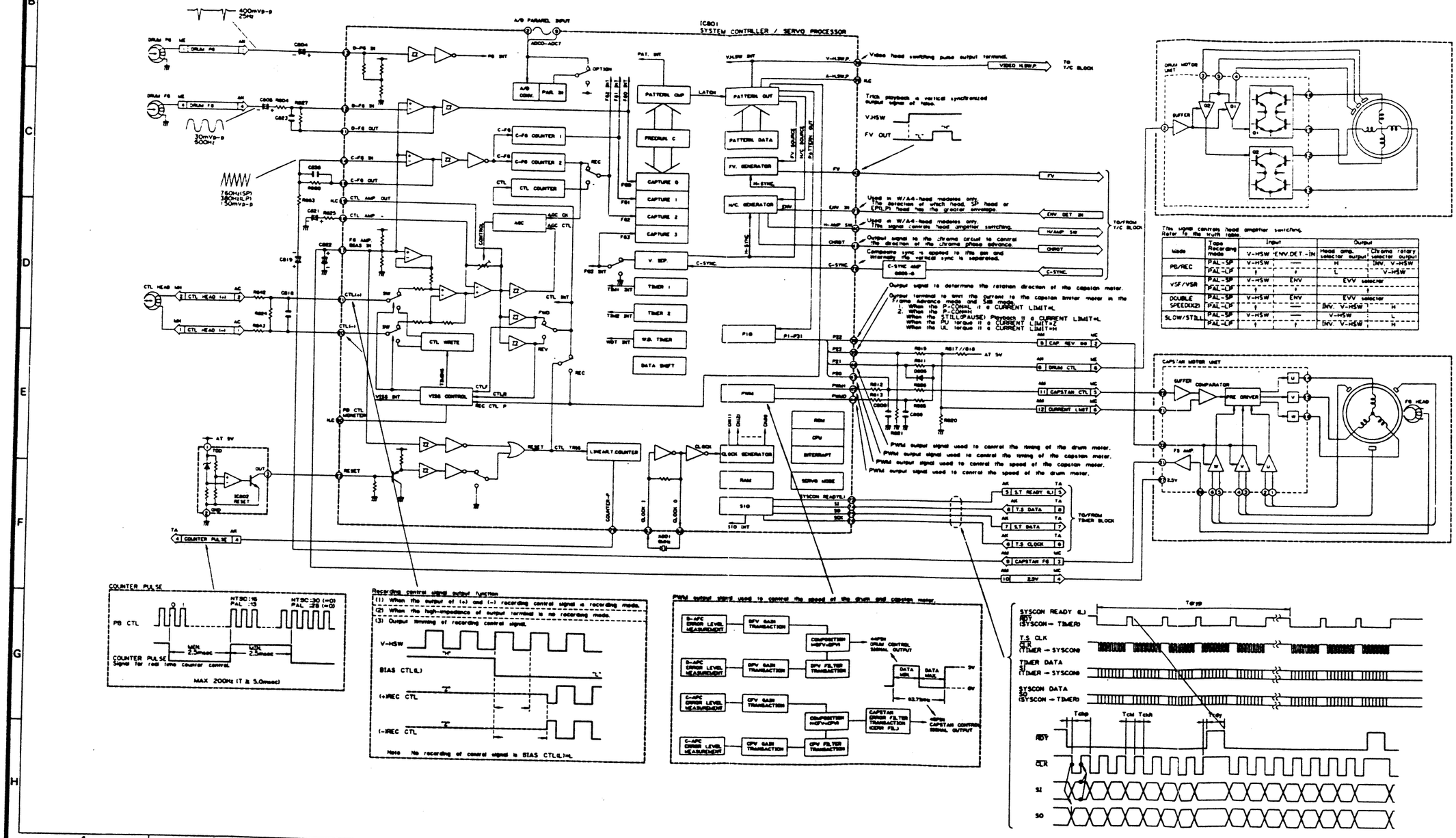
8. Remove the short circuited in step 7.
9. Finally press the ALC button to clear the TEST mode.

- E^2PROM map
  (Note: "1": flashing "0": lights up)

No.	Function name													
I63	I^2C-BUS	0	0	0	0	0	0	0	0	0	0	0	0	0
I62	SIMUL	1	1	1	1	1	1	1	1	1	1	1	1	1
I61	MULTI	0	0	0	0	0	0	0	0	0	0	0	0	0
I60	OEM	0	0	0	0	0	0	0	0	0	1	1	0	0
I59	COLOUR2	0	0	0	0	0	0	0	0	0	1	1	1	1
I58	COLOUR1	0	0	0	0	0	0	0	0	0	1	1	1	1
I57	COLOUR0	0	1	1	1	0	1	1	1	1	0	0	0	0
I56	GERMANY	0	0	0	0	0	0	0	0	0	0	0	0	0
I55	AUX2	0	0	0	0	0	0	0	0	0	0	0	0	0
I54	HYPER	0	0	0	0	0	0	0	0	0	0	0	0	0
I53	UHF	0	0	0	0	0	1	1	0	0	0	0	0	0
I52	FRENCH	0	0	0	0	0	0	0	0	0	0	0	0	0
I51	LP	0	0	0	1	1	0	1	0	1	0	1	1	0
I50	VPS	1	0	1	0	1	0	0	0	0	0	0	0	0
I49	Hi-Fi	0	0	0	0	0	0	0	0	0	0	0	0	0
I48	VCR	0	0	0	0	0	0	0	1	1	0	0	0	0
Displayed No.		4004	4200	4204	4208	400C	4220	4228	4201	4209	5C00	5C08	4C08	4C00
MODEL'S VC-		A33GM A37GM	A36SM A36YM A36S A36LM A234SM B20X		A55YM A55LM A52SM A52YM A454SM B60X	A54GM	A36HM A46HM	A55HM A52HM A49HM	B20NZ	B60NZ	B38B	B51B	A55B	A32B

VC-A32B,VC-A55B

SERVO PROCESS BLOCK DIAGRAM

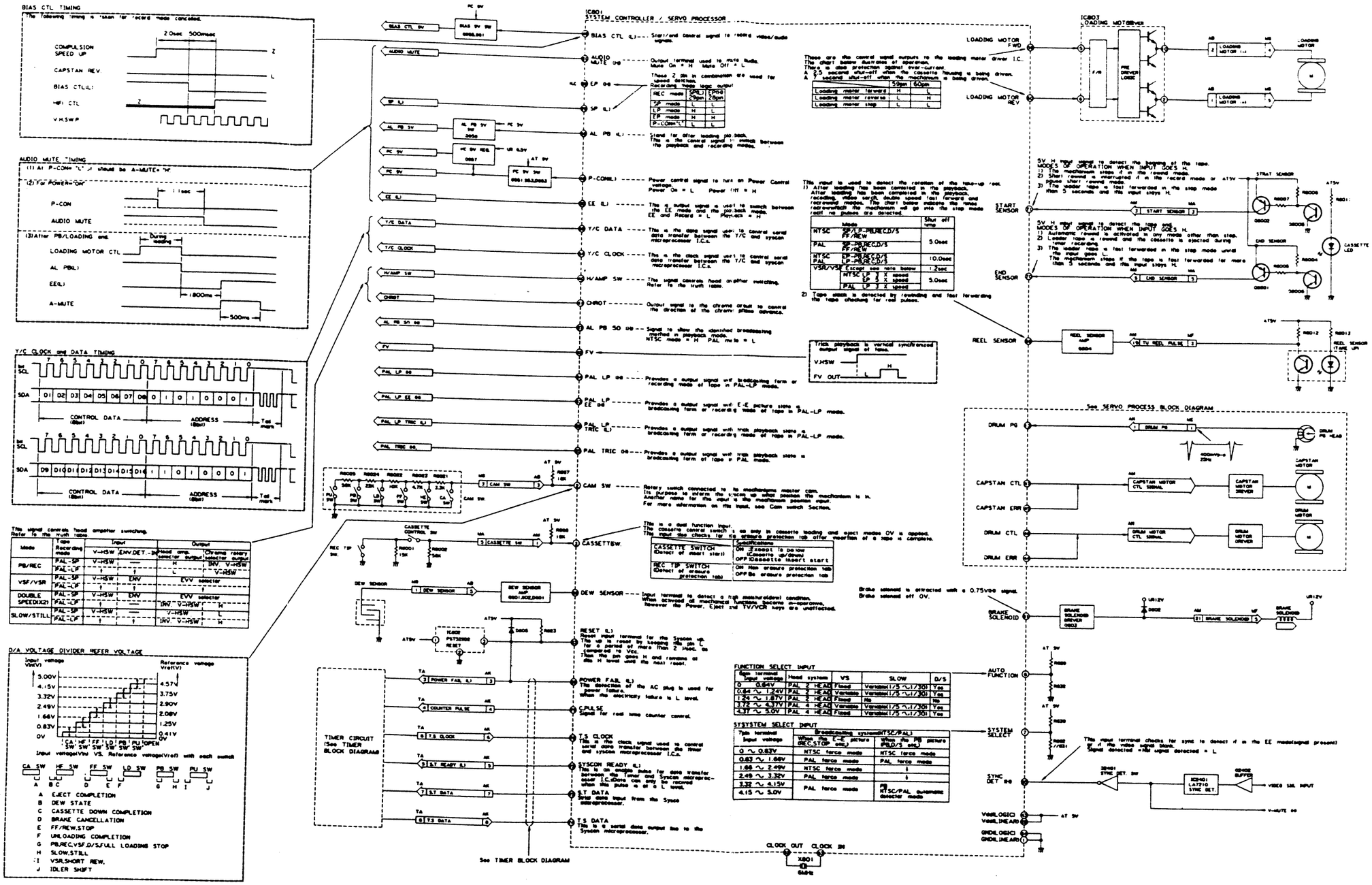


Mode	Tape Recording mode	Input		Output	
		V-HSW	ENV.DET-IN	Head amp. selector output	Chroma rotary selector output
PB/REC	PAL-SP	V-HSW	—	H	INV. V-HSW
	PAL-LP	↑	↑	L	V-HSW
VSP/VSR	PAL-SP	V-HSW	ENV	EVV selector	
	PAL-LP	↑	↑		
DOUBLE SPEED(X2)	PAL-SP	V-HSW	ENV	EVV selector	
	PAL-LP	↑	—	INV. V-HSW	H
SLOW/STILL	PAL-SP	V-HSW	—	V-HSW	L
	PAL-LP	↑	↑	INV. V-HSW	H

This signal controls head amplifier switching.
Refer to the truth table.

VC-A32B,VC-A55B

SYSTEM CONTROL BLOCK DIAGRAM



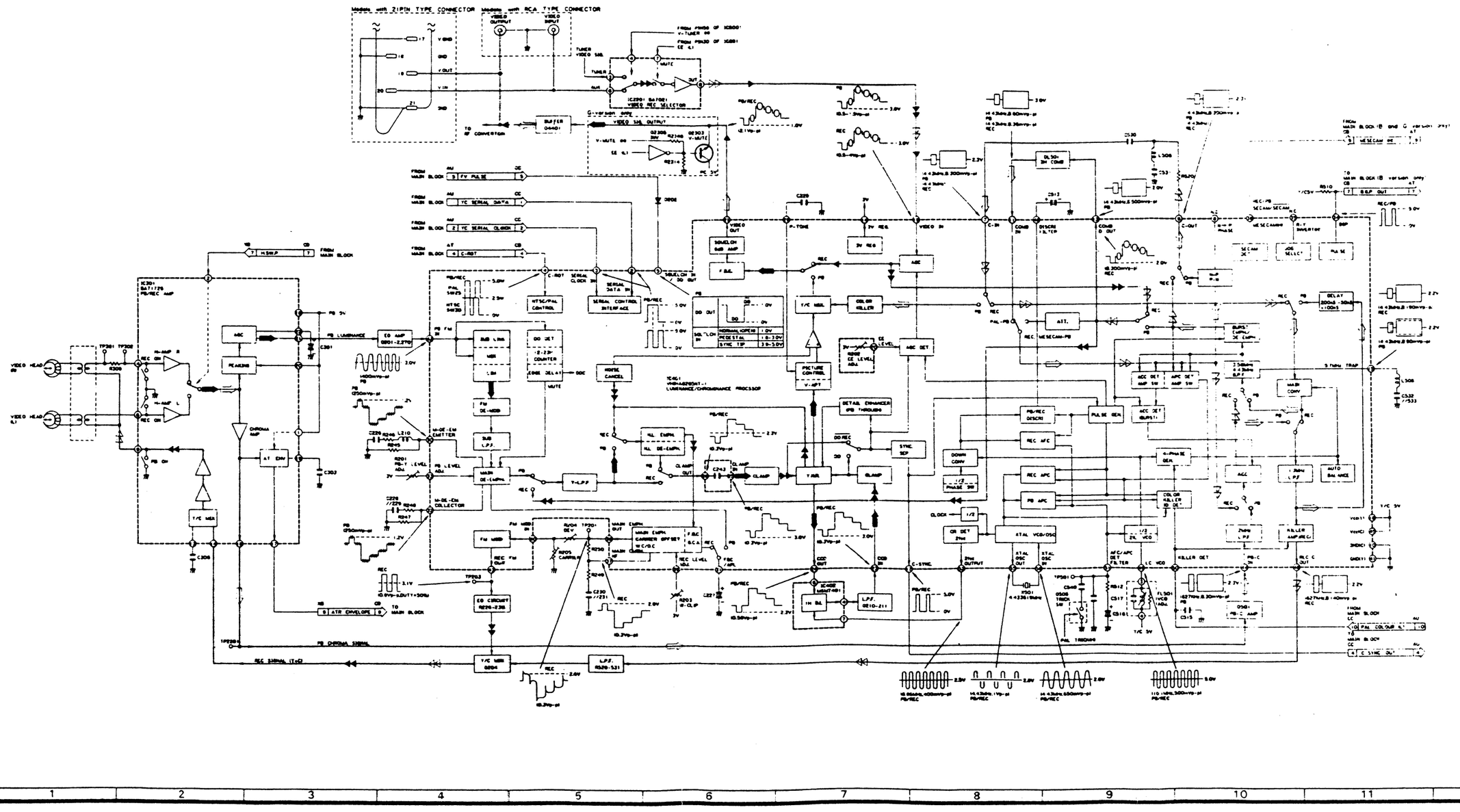
61

62

VC-A32B,VC-A55B

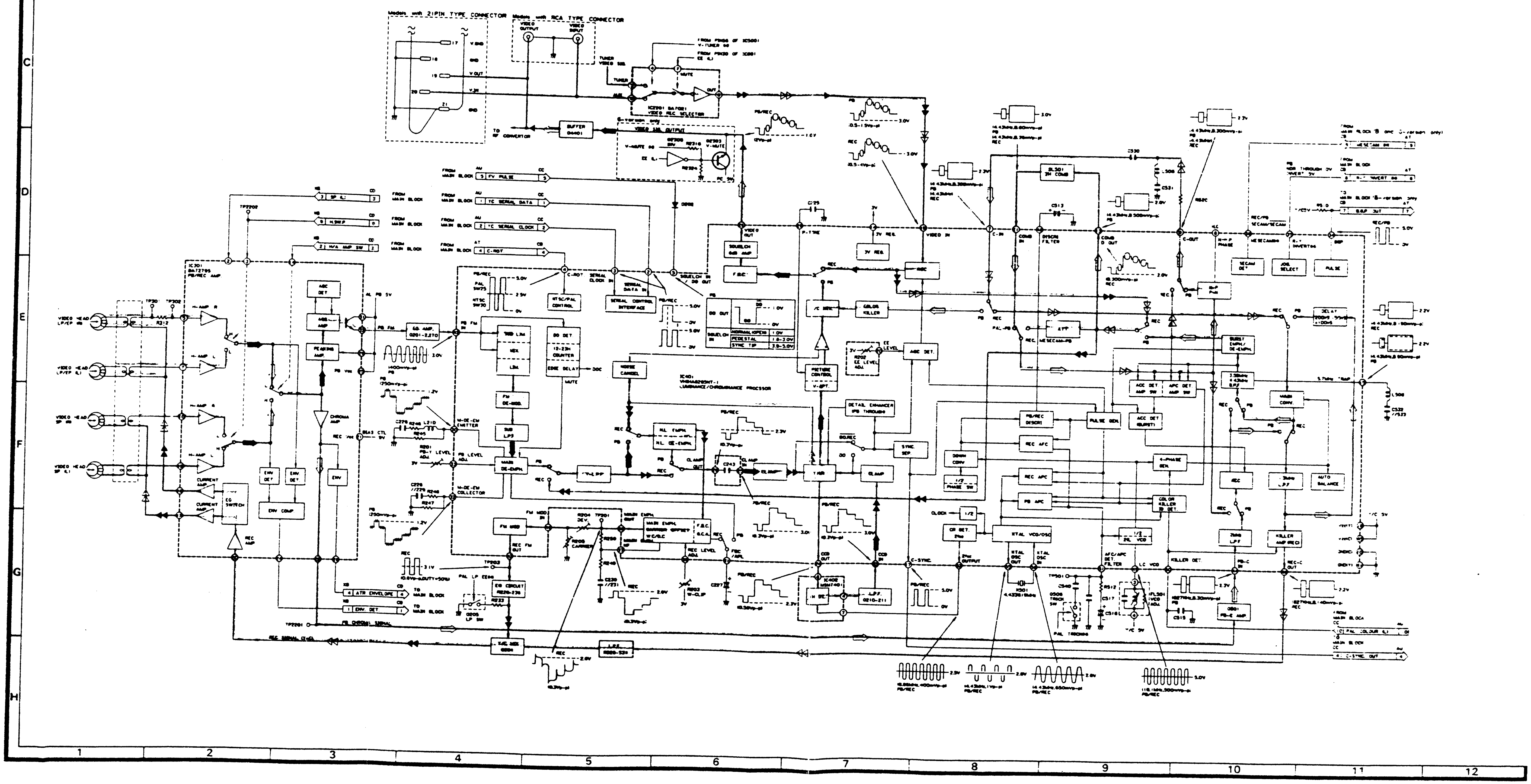
SIGNAL FLOW BLOCK DIAGRAM (VC-A32B)

▸ E-E Signal
≫ Recording Chrominance Signal
⇉ Playback Chrominance Signal
▸▸ Recording Luminance Signal
➡ Playback Luminance Signal


Models with 21PIN TYPE CONNECTOR
Models with RCA TYPE CONNECTOR
VIDEO OUTPUT
VIDEO INPUT
TUNER VIDEO SIG.
MUTE
VIDEO SIG. OUTPUT
VIDEO REC. SELECTOR
TO RF CONVERTOR
V-MUTE
VIDEO OUT
VIDEO IN
P-TONE
3V REG.
SQUELCH SW AMP
F.B.C.
AGC
Y/C MIX
COLOR KILLER
C-IN
COMB D OUT
COMB IN
DISCRI. FILTER
C-OUT
DELAY 200nS - 360nS +100nS
SECAM
JOG SELECT
PULSE
REC/PB SECAM/SECAM
R-Y INVERTOR
BGP
SYNC SEP
DETAIL ENHANCER (PB THROUGH)
PICTURE CONTROL
V-APT
H-DE-EMPH
H-DE-EMPH COLLECTOR
Y-LPF
CLAMP
Y-AMP
BLANK
SYNC SEP
DOWN CONV
1/2 PHASE 180
REC AFC
PB APC
COLOR KILLER TO OSC
CLOCK
1/2
CB DET 2fH
2fH OUTPUT
ATAL VCO/OSC
ATAL OSC OUT
ATAL OSC IN
AFC/APC DET FILTER
LC VCO
KILLER DET
PB-C AMP
ACC DET
APC DET
ACC DET AMP SW
APC DET AMP SW
PULSE GEN
REC/PB DESCRI
REC AFC
REC APC
PB APC
4-PHASE GEN
ACC
1.7MHz LPF
AUTO BALANCE
COLOR KILLER TO DE
KILLER AMP(REC)
REC C OUT
PB-C
Y/C SW
VCO(1)
VCO(2)
3MOD(1)
GND(1)
5.7MHz TRAP
L306
C532 /C533
BURST GATE 2fH
BURST GATE 4fH
MAIN CONV
ATT.
REC/PB SECAM/SECAM
REC SECAM/PB
PAL M
DELAY 200nS - 360nS +100nS
FROM MAIN BLOCK (B) and (C) version only
TO MAIN BLOCK (B) version only
REC/PB
Y/C 5V
SYNC OUT
FROM MAIN BLOCK
TO MAIN BLOCK
PAL COLOUR ID
C SYNC OUT
IC301 BA7175 PB/REC AMP
TP301 TP302
R309
H-AMP R
H-AMP L
REC ON
PB ON
VIDEO HEAD (B)
VIDEO HEAD (C)
ADC
REMIXING
C301
EQ AMP
PB LUMINANCE
C303
AT ENV
CHROMA AMP
Y/C MIX
C306
PB CHROMA SIGNAL
REC SIGNAL (Y+C)
SUB LPF
MAIN DE-EMPH
FM DE-MOD
FM MOD
FM MOD OUT
REC FM OUT
REC LEVEL ADJ.
PB LEVEL ADJ.
PB-Y LEVEL ADJ.
MAIN EMPH
MAIN EMPH CARRIER OFF SET
W.C/D.C
MAIN CONTROL
F.B.C. B.C.A.
REC LEVEL ADJ.
REC CARRIER
EQ CIRCUIT
C-ROT
SERIAL CLOCK
SERIAL DATA
SERIAL CONTROL INTERFACE
SQUELCH IN / SQ OUT
HTSC/PAL CONTROL
PB/REC
PAL SW/FB
HTSC SW/FB
DD DET
1/2 COUNTER
EDGE DELAY
MUTE
H-DE-EMPH EMITTER
H-DE-EMPH COLLECTOR
IC401 VHS/BASEPORT-I LUMINANCE/CHROMINANCE PROCESSOR
IC402 M51137-401
IN SW
L.P.F. 4510-211
L.P.F. 4520-531
Y/C MIX 0204
EQ CIRCUIT 4226-236
ATR ENVELOPE
TO MAIN BLOCK
FROM MAIN BLOCK
H SWP
V SYNC
V IN
V OUT
GND
V SYNC
C-ROT
SQUELCH
FV PULSE
I²C SERIAL DATA
I²C SERIAL CLOCK
C-ROT
SQUELCH
TP203
TP204
TP250
TP501
R250
R251
R205 CARRIER
R203 D-CLIP
R201 PB-Y LEVEL ADJ.
R205
R206
R207
R208
R209
R210
R211
R212
R213
R214
R215
R216
R217
R218
R219
R220
R221
R222
R223
R224
R225
R226
R227
R228
R229
R230
R231
R240
L210
C220
C221
C222
C223
C224
C225
C226
C227
C228
C229
C230
C231
C232
C233
C234
C235
C236
C237
C238
C239
C240
C241
C242
C243
C244
C245
C246
C247
C248
C249
C250
C251
C252
C253
C254
C255
C256
C257
C258
C259

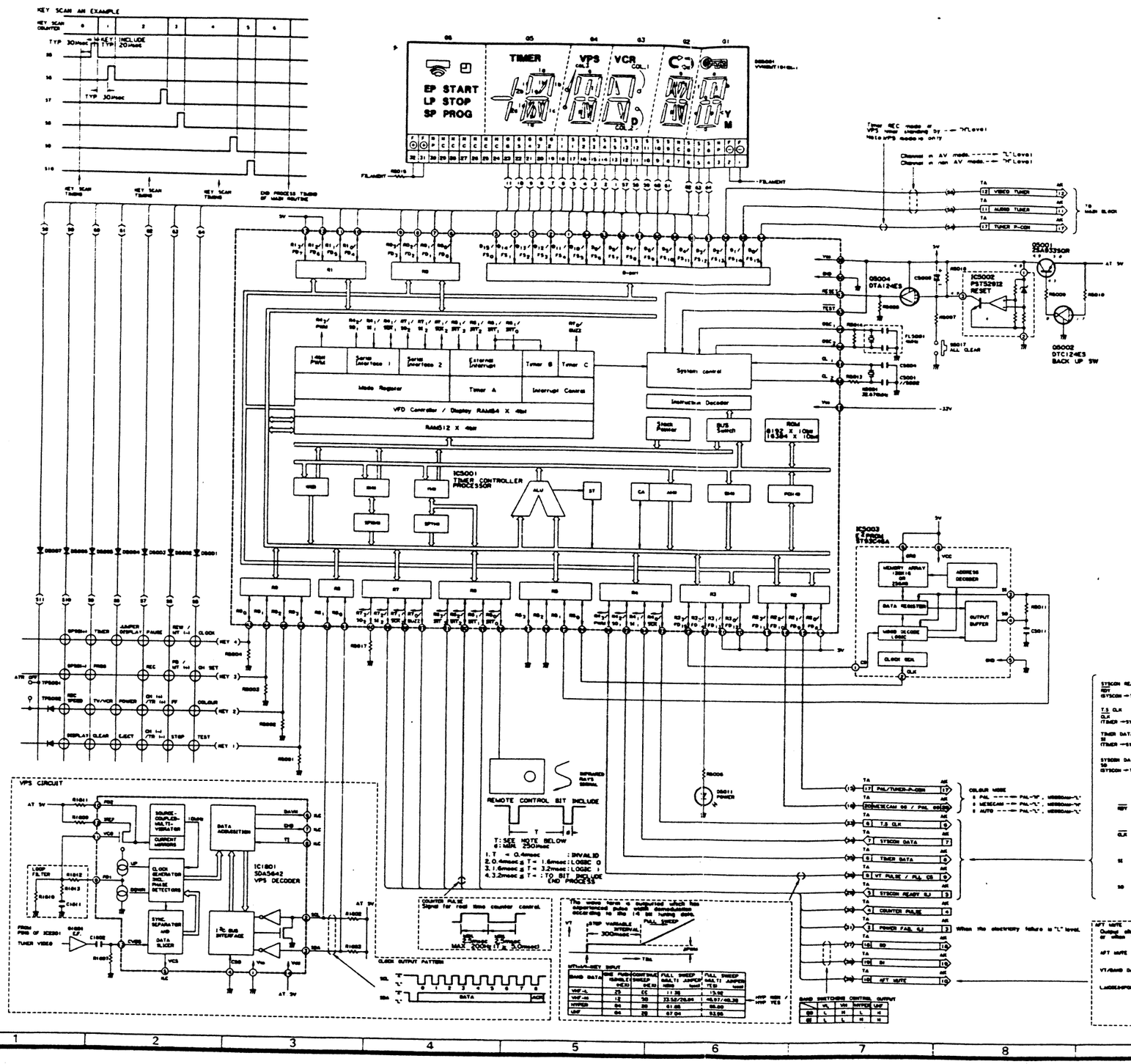
SIGNAL FLOW BLOCK DIAGRAM (VC-A55B)

▶ E-E Signal ▷▷ Recording Chrominance Signal ⇨ Playback Chrominance Signal
▶▶ Recording Luminance Signal ➡ Playback Luminance Signal


Models with 21PIN TYPE CONNECTOR
Models with RCA TYPE CONNECTOR
VIDEO OUTPUT
VIDEO INPUT
TO RF CONVERTOR
BUFFER Q4401
IC2201 BA7081 VIDEO REC SELECTOR
VIDEO HEAD LP/EP (R)
VIDEO HEAD LP/EP (L)
VIDEO HEAD SP (R)
VIDEO HEAD SP (L)
IC301 BA7279S PB/REC AMP
AGC DET
AGC AMP
PEAKING AMP
CHROMA AMP
ENV DET
ENV COMP
EQ SWITCH
REC AMP
CURRENT AMP
EQ AMP Q201-2,270
FM DE-MOD
SUB LPF
MAIN DE-EMPH
NOISE CANCEL
FM MOD
EQ CIRCUIT
Y/C MIX
SERIAL CONTROL INTERFACE
NTSC/PAL CONTROL
IC401 VHIMA8285NT-1 LUMINANCE/CHROMINANCE PROCESSOR
SQUELCH 6dB AMP
AGC DET
3V REG
COLOR KILLER
PICTURE CONTROL
DETAIL ENHANCER
SYNC SEP
CLAMP
IC402 MSM7401
L.P.F. Q210-211
PB/REC DISCRI
REC AFC
REC APC
PB APC
DOWN CONV
XTAL VCO/OSC
PULSE GEN
ACC DET (BURST)
4-PHASE GEN
COLOR KILLER ID DET
1/2 2fL VCO
2MHz LPF
KILLER AMP (REC)
MAIN CONV
AUTO BALANCE
REC
SECAM DET
JOB SELECT
PULSE
BURST EMPH/DE-EMPH
DELAY
TO MAIN BLOCK
FROM MAIN BLOCK

VC-A32B,VC-A55B

TIMER BLOCK DIAGRAM (V-SYN)

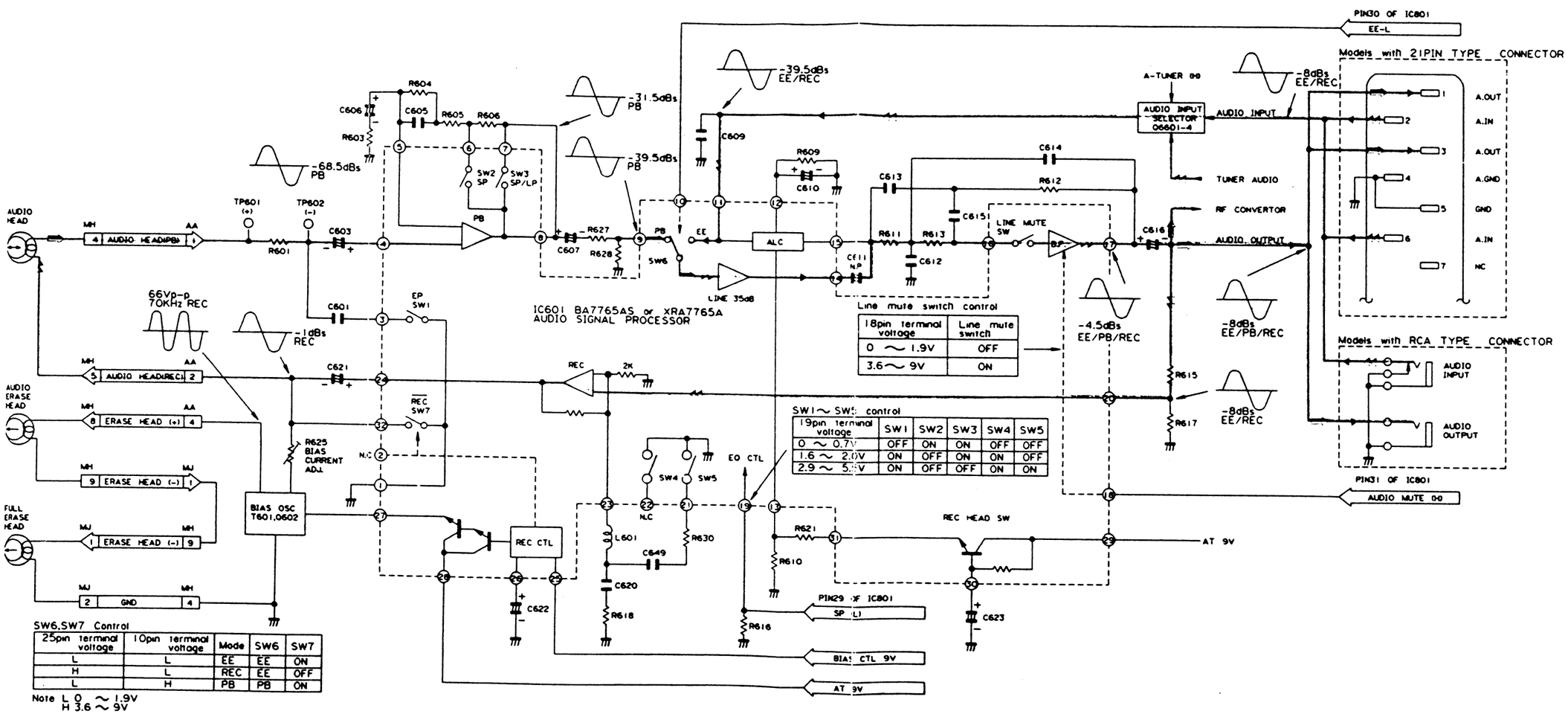


SEGMENT & GRID PATTERN OF FLOURESCENT DISPLAY TUBE

		G6	G5	G4	G3	G2	G1
S0		a	b	c	d	e	f
S1	START	a	b	c	d	e	f
S2	STOP	a	b	c	d	e	f
S3	PROG	a f b g e c d	b c	a f b g e d	a f b g c d	a f b g e c d	a f b g e c d
S4	EP	a	—	a	a f b g e c d	a f b g e c d	
S5	LP	a f b g e c d	b c	a f b g e d	a f b g c d	a f b g e c d	
S6	SP	a f b g e c d	a b g c d COL.3	D	a f b g c d	a f b g e c d	
S7	—	a f b g e	a f b g c	a COL.1,1	a f b g c d		Y
S8	—	c	c	c	c	c	c
S9	—	a	a	a	a	a	a
S10	—	a f b g e	a f b g c	a COL.1,2	a f b g c d		M
S11	—	d	d	d	d	d	d
S12		TIMER	VPS	VCR			

AUDIO BLOCK DIAGRAM

▸ E-E Signal ▸▸ Audio Recording Signal ⇒ Audio Playback Signal



MEMO

SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:
BE SURE TO USE GENUINE PARTS FOR SECURING THE SAFETY AND RELIABILITY OF THE SET.
PARTS MARKED WITH "⚠" AND PARTS SHADED (IN BLACK) ARE ESPECIALLY IMPORTANT FOR MAINTAINING THE SAFETY AND PROTECTING ABILITY OF THE SET.
BE SURE TO REPLACE THEM WITH PARTS OF SPECIFIED PART NUMBER.

SAFETY NOTES:

1. *DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.*
2. *SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.*

NOTES:

1. *The unit of resistance "ohm" is omitted(K = 1000 ohm, M = 1 Meg ohm).*
2. *All resistors are 1 / 8 watt, unless otherwise noted.*
3. *The unit of capacitance "F"is omitted (μ = μF, p = $\mu\mu$F).*
4. *The values in parentheses are the ones in the PB mode; the values without parentheses are the ones in the REC mode.*

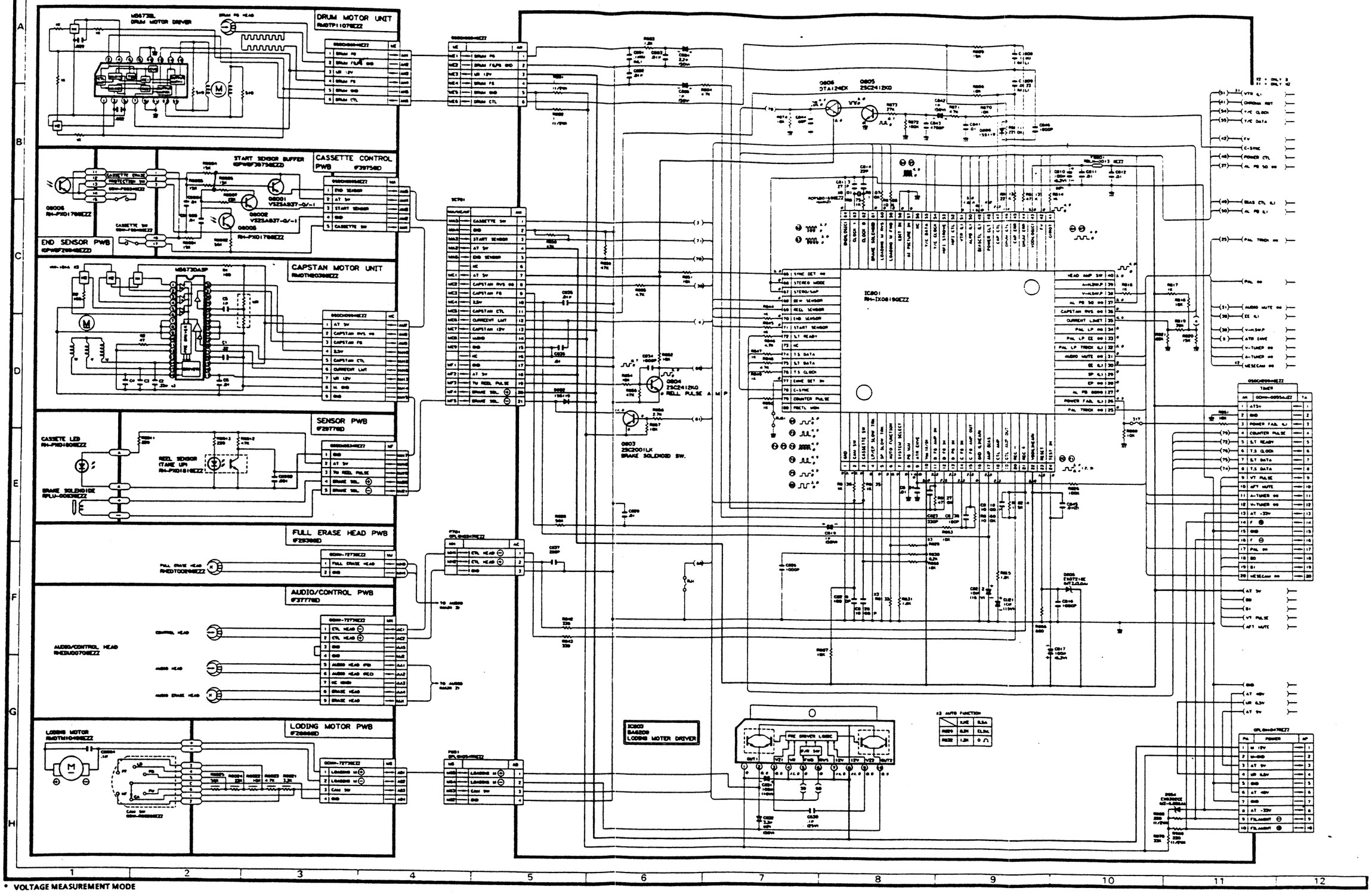
VOLTAGE MEASUREMENT CONDITIONS:

1. *DC voltages are measured between points indicated and chassis ground by VTVM, with AC200~240V, 50/60Hz supplied to unit and all controls are set to normal viewing picture unless otherwise noted.*
2. *Voltages are measured with 10000μV B & W or colour signal.*

WAVEFORM MEASUREMENT CONDITIONS:
10000μV 87.5 percent modulated colour bar signal is fed into tuner.

CAUTION:
This circuit diagram is original one. Therefore there may be a slight difference from yours.

MAIN CIRCUIT (1) (VC-A32B)



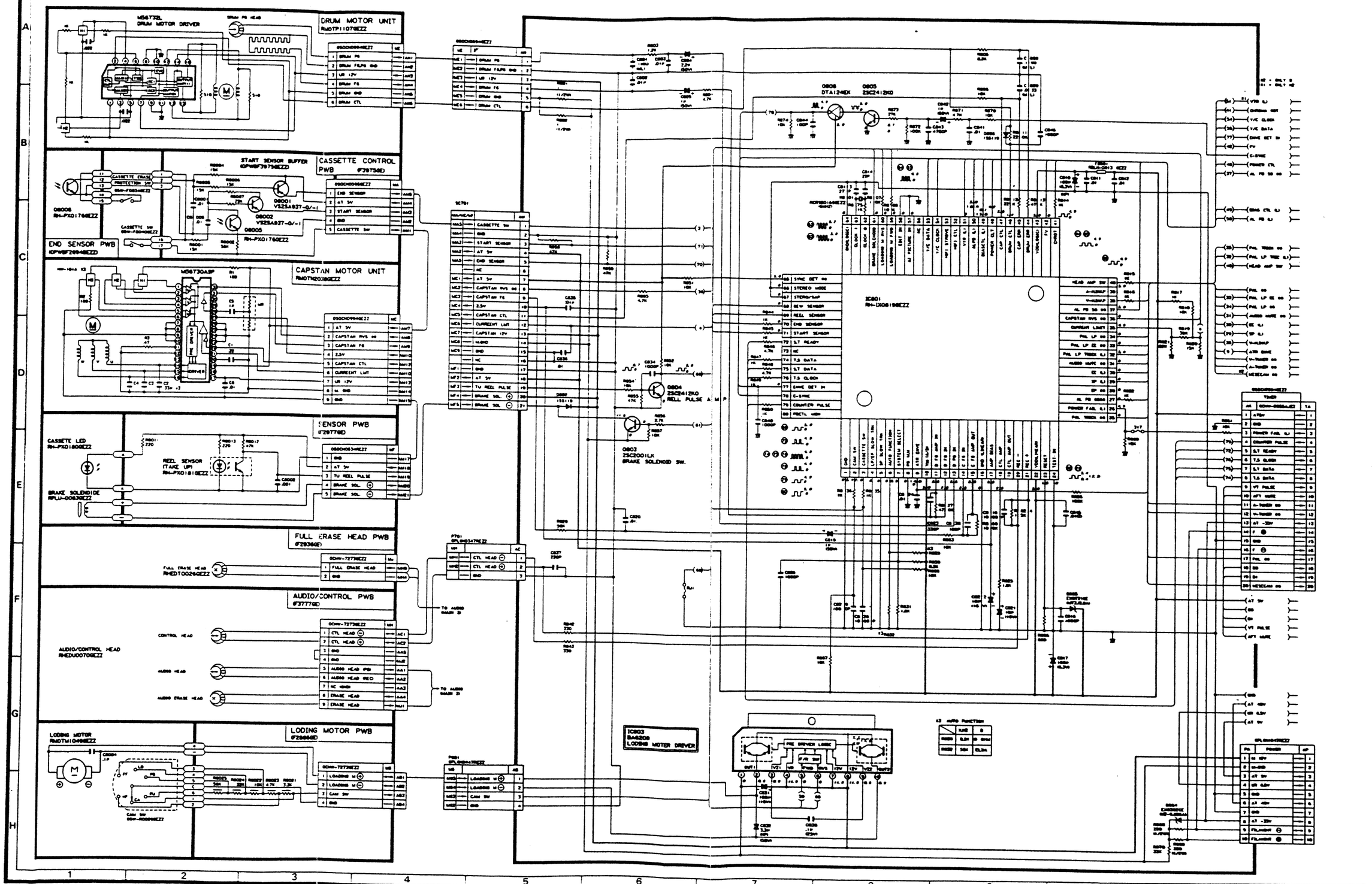
* VOLTAGE MEASUREMENT MODE

PB ..... Parentheses ( )

REC ..... Without Parentheses

VC-A32B,VC-A55B

MAIN CIRCUIT (1) (VC-A55B)



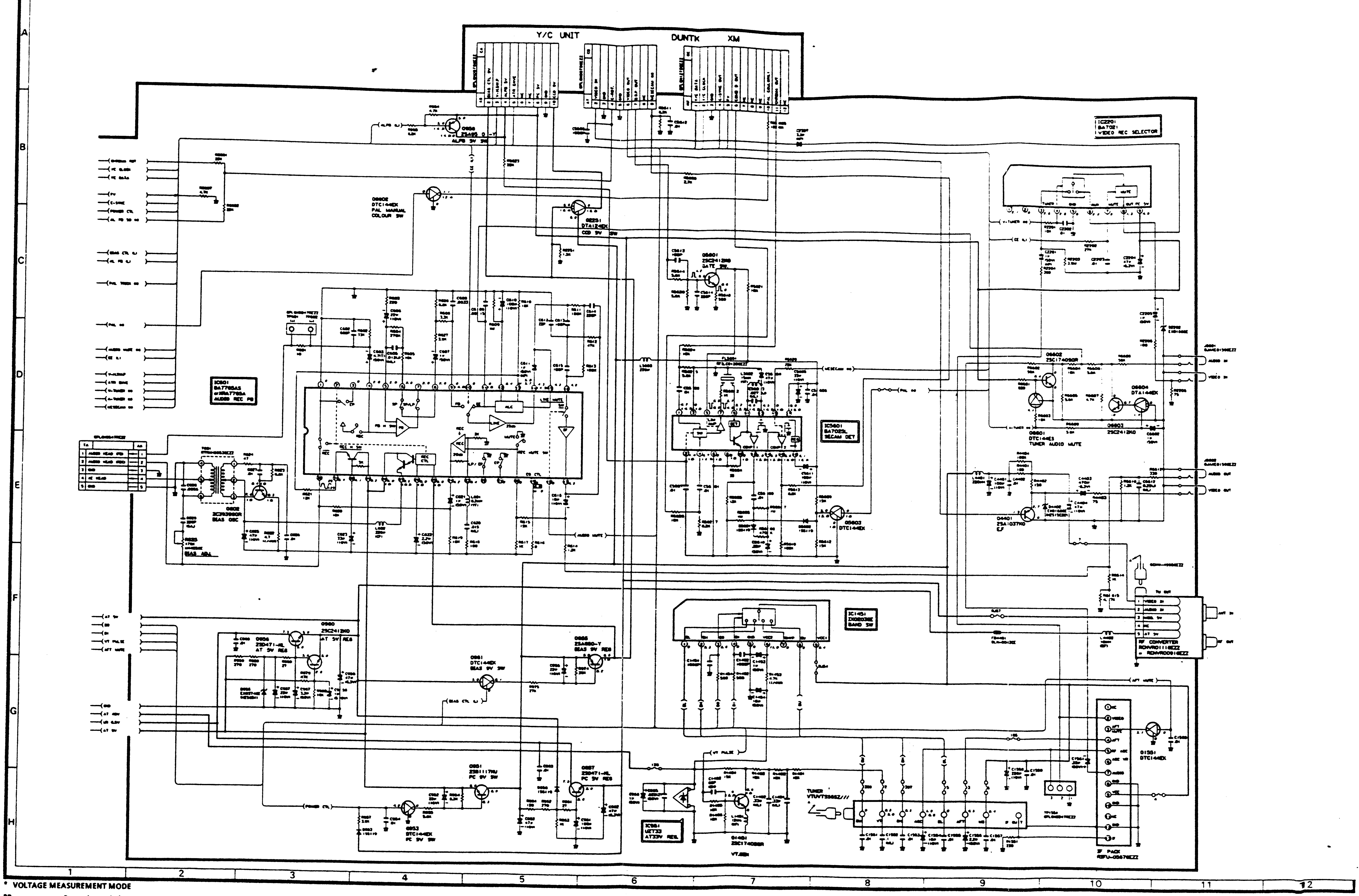
* VOLTAGE MEASUREMENT MODE

PB ..... Parentheses ( )

REC ..... Without Parentheses

VC-A32B,VC-A55B

MAIN CIRCUIT (2) (VC-A32B)


Y/C UNIT
DUNTK
XM
IC2201 BA7021 VIDEO REC SELECTOR
IC501 BA7765AS or IRA7765A AUDIO REC PB
IC5601 BA7025L SECAM DET
IC1451 IX0803BE BAND SW
IC951 UZT33 AT33V REG
Q8802 DTC144EK PAL MANUAL COLOUR SW
Q2251 DTA124EK CCD 9V SW
Q6801 2SC2412KQ GATE SW
Q6602 2SC1740SQR
Q6604 DTA144EK
Q6601 DTC144ES TUNER AUDIO MUTE
Q6603 2SC2412KQ
Q4401 2SA1037KQ E.F
Q6803 DTC144EK
BIAS OSC
BIAS ADJ
RF CONVERTER
IF PACK
TUNER
AUDIO IN
VIDEO IN
AUDIO OUT
VIDEO OUT
ANT IN
RF OUT
A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
9
10
11
12

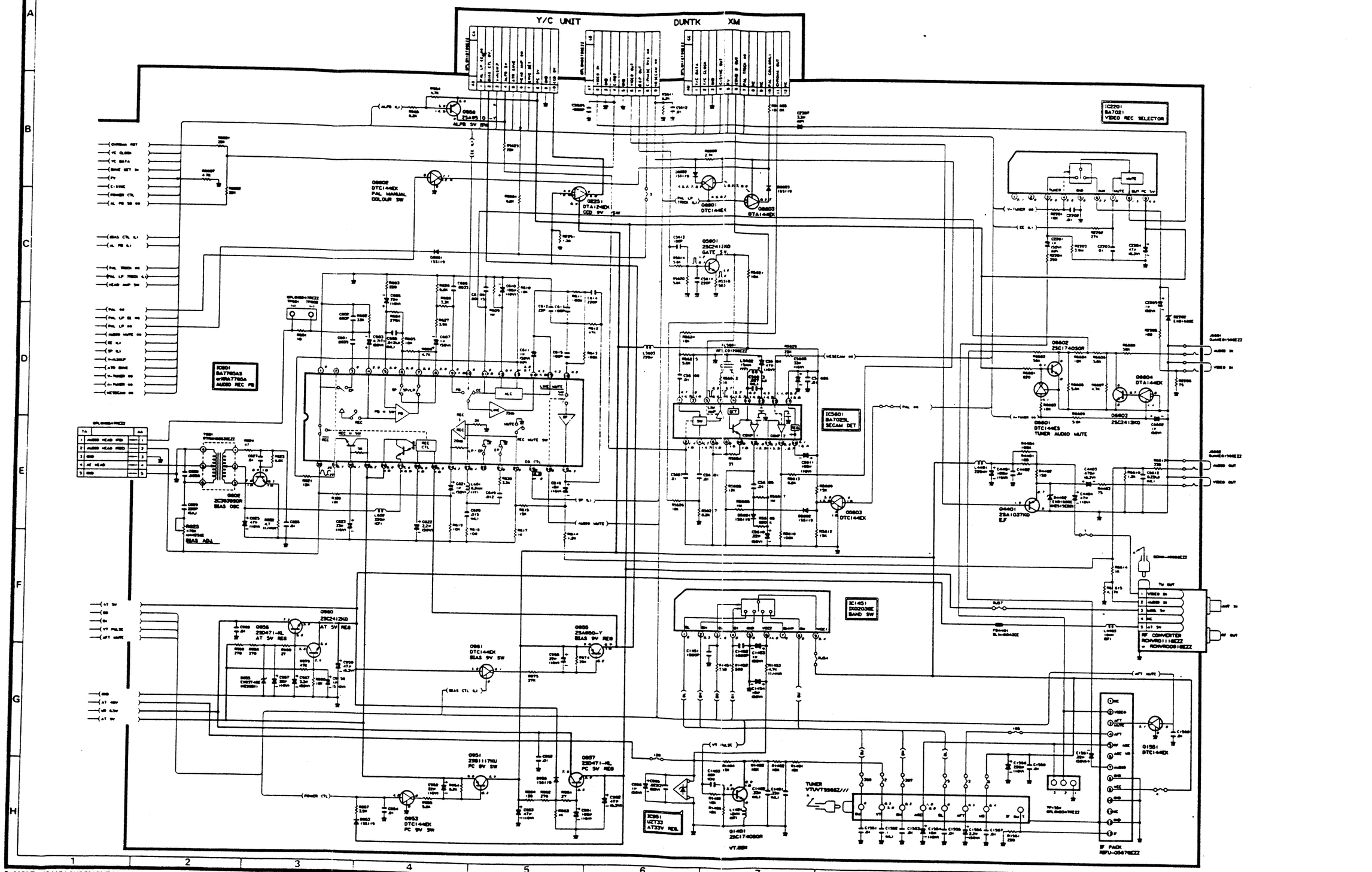
* VOLTAGE MEASUREMENT MODE

PB .... Parentheses ( )

REC .... Without Parentheses

VC-A32B,VC-A55B

MAIN CIRCUIT (2) (VC-A55B)



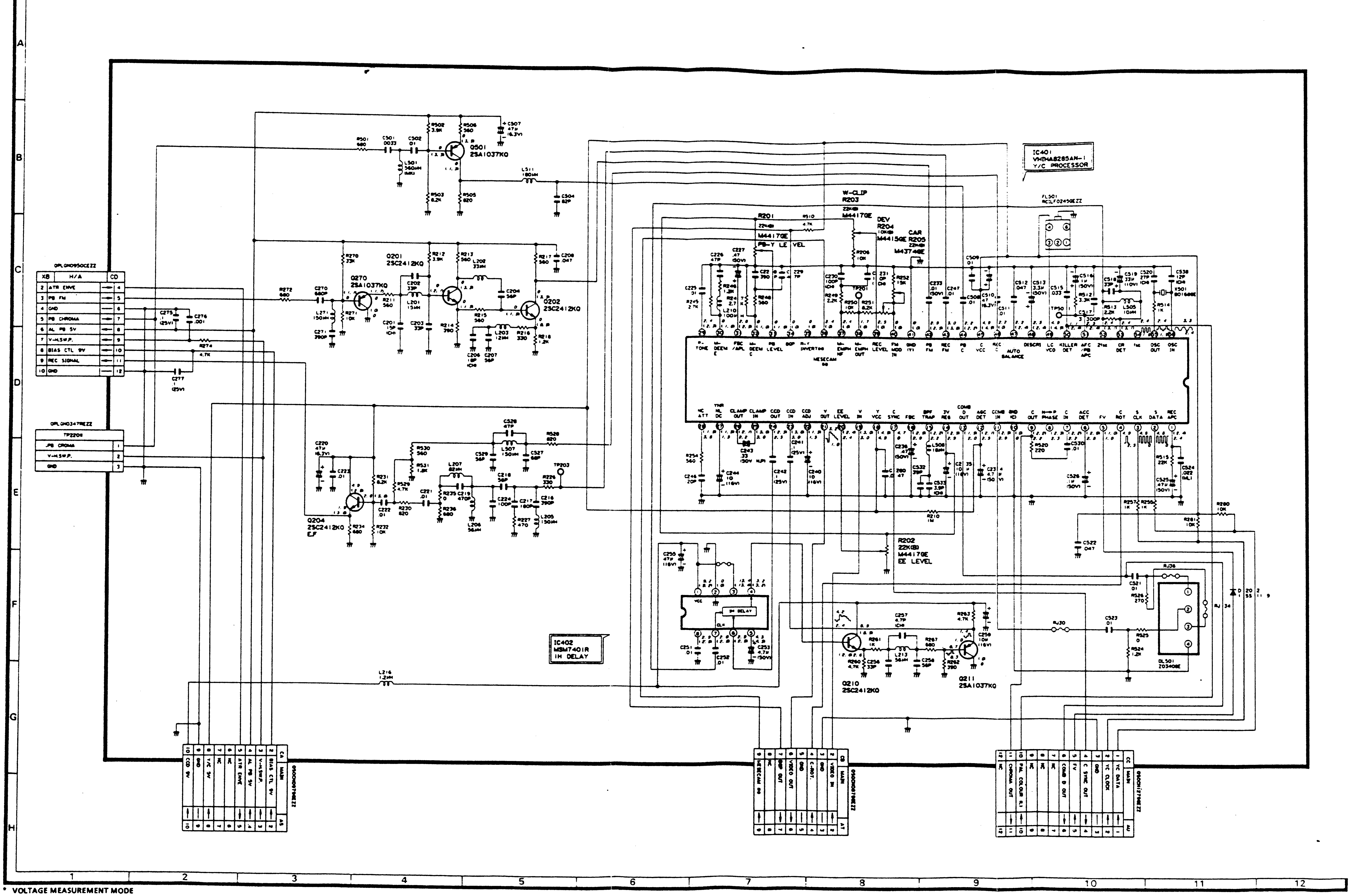
* VOLTAGE MEASUREMENT MODE

PB ..... Parentheses ( )

REC ..... Without Parentheses

VC-A32B,VC-A55B

Y/C CIRCUIT (VC-A32B)



IC401 VHIHA8285AN-1 Y/C PROCESSOR
IC402 MSM7401R 1H DELAY
FL501 RCILF0245GEZZ
DL501 Z0340GE
Q501 2SA1037KQ
Q201 2SC2412KQ
Q202 2SC2412KQ
Q270 2SA1037KQ
Q204 2SC2412KO E.F
Q210 2SC2412KO
Q211 2SA1037KQ
W-CLIP R203 22K(B) M44170E
R201 22K(B) M44170E PB-Y LE VEL
DEV R204 10K(B) M4415GE
CAR R205 22K(B) M4374GE
R202 22K(B) M44170E EE LEVEL
TP201
TP203
TP501
QPLGN0950CEZZ
XB H/A CD
2 ATR ENVE 4
3 PB FM 5
4 GND 6
5 PB CHROMA 7
6 AL PB 5V 8
7 V-H.SW.P. 9
8 BIAS CTL 9V 10
9 REC SIGNAL 11
10 GND 12
QPLGN0347REZZ
TP2208
PB CROMA 1
V-H.SW.P. 2
GND 3
CA MAIN AS
10 CCD 9V
9 GND
8 Y/C 9V
7 NC
6 NC
5 ATR ENVE
4 AL PB 5V
3 V-H.SW.P.
2 BIAS CTL 9V
CB MAIN AT
9 MESECAM 90
8 NC
7 BBP OUT
6 VIDEO OUT
5 GND
4 C-ROT.
3 GND
2 VIDEO IN
CC MAIN AU
12 NC
11 CHROMA OUT
10 PAL COLOUR RJ
9 NC
8 NC
7 NC
6 COMB D OUT
5 FV
4 C SYNC OUT
3 GND
2 YC CLOCK
1 YC DATA
A
B
C
D
E
F
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12

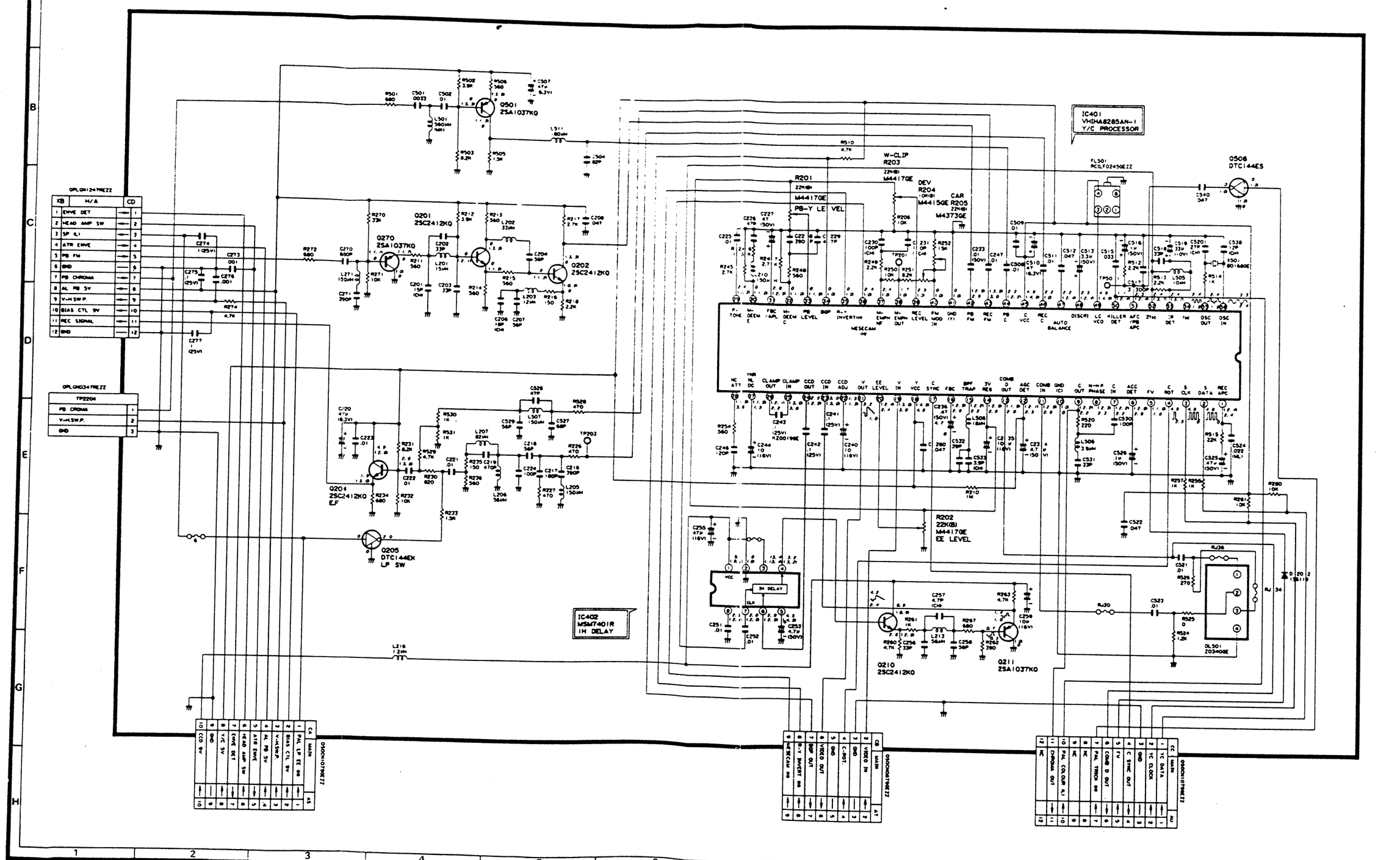
* VOLTAGE MEASUREMENT MODE

PB .... Parentheses ( )

REC .... Without Parentheses

VC-A32B,VC-A55B

Y/C CIRCUIT (VC-A55B)

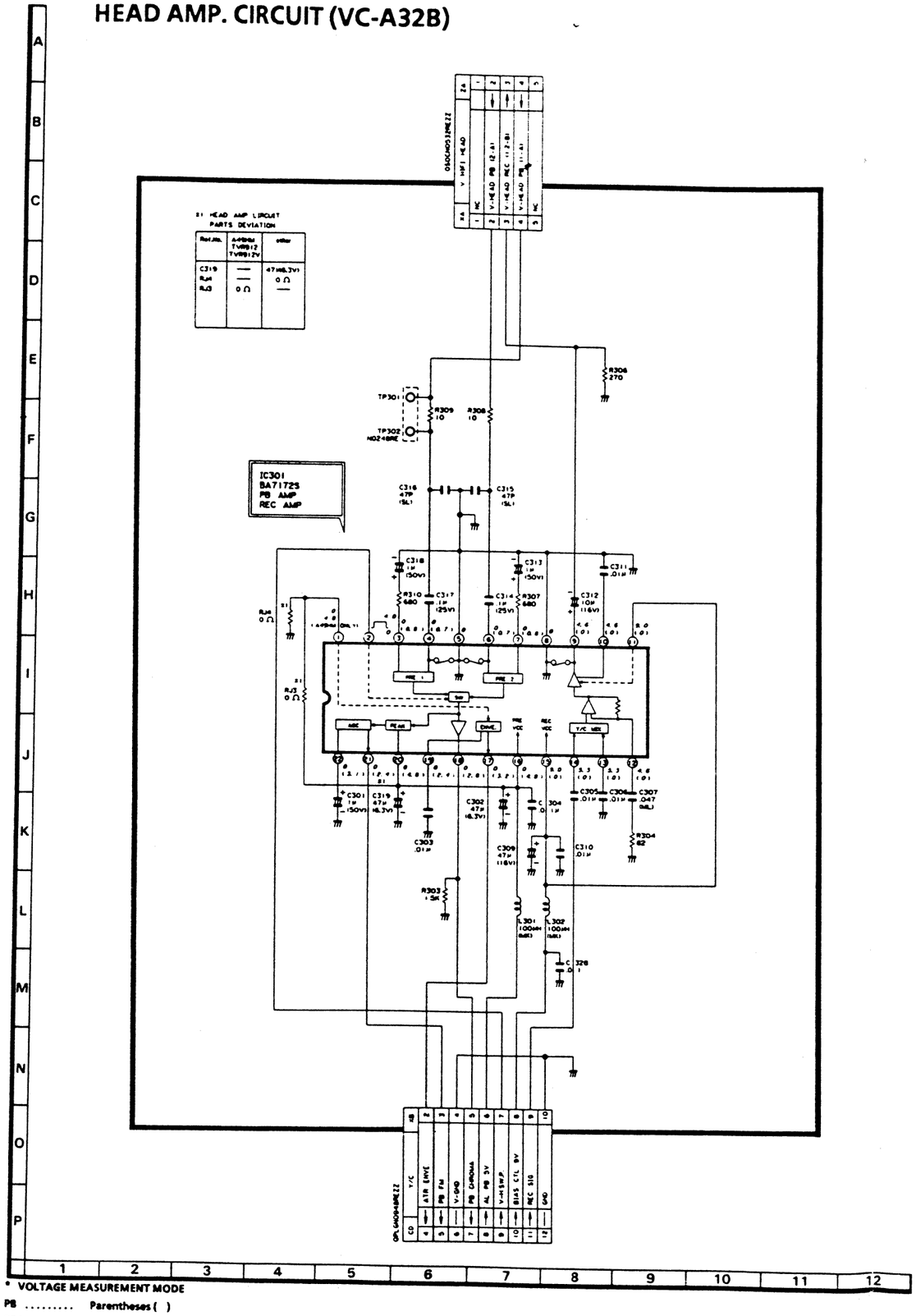


* VOLTAGE MEASUREMENT MODE

PB ..... Parentheses ( )

REC ..... Without Parentheses

HEAD AMP. CIRCUIT (VC-A32B)



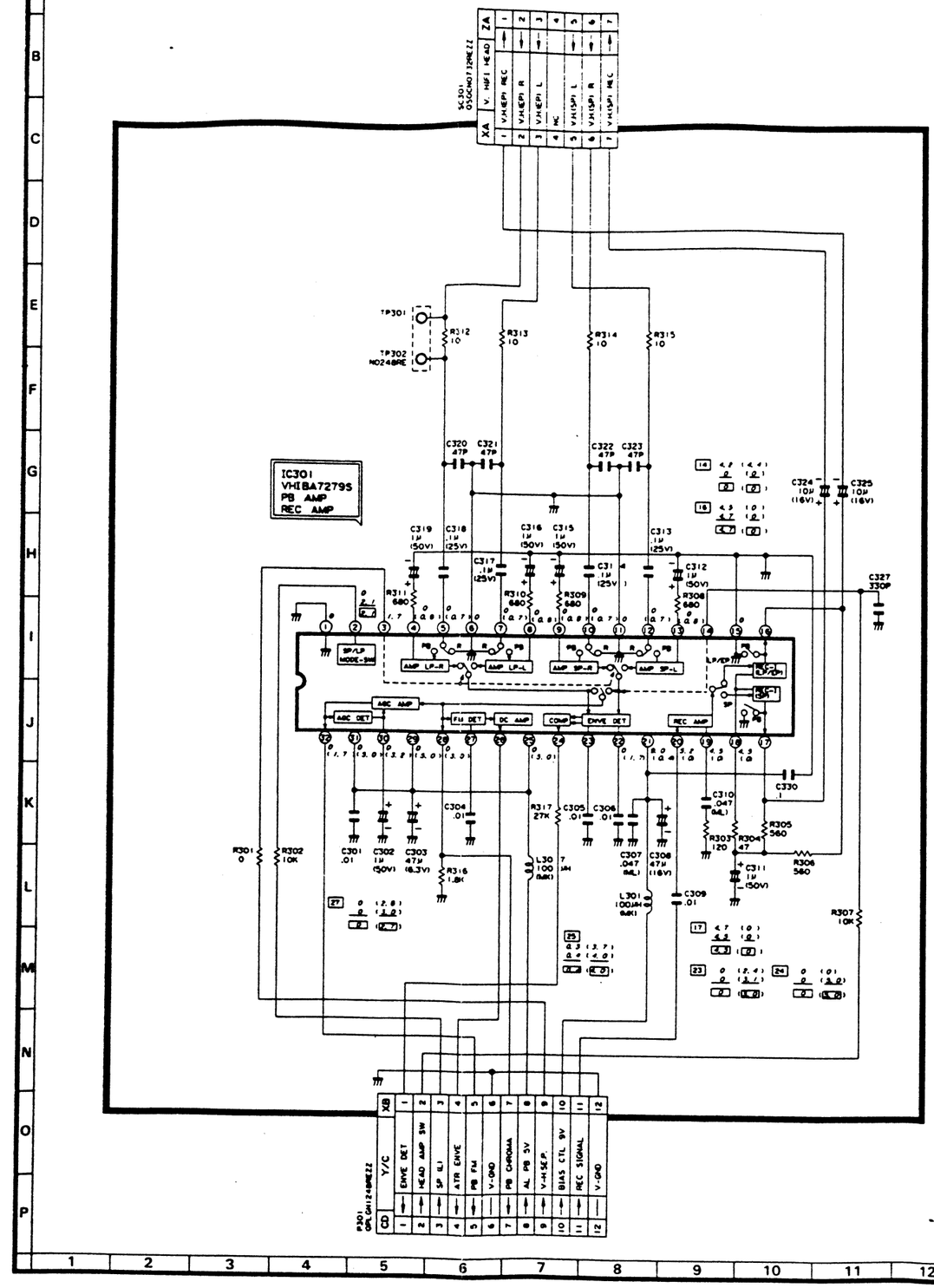
* VOLTAGE MEASUREMENT MODE

PB ..... Parentheses ( )

REC ..... Without Parentheses

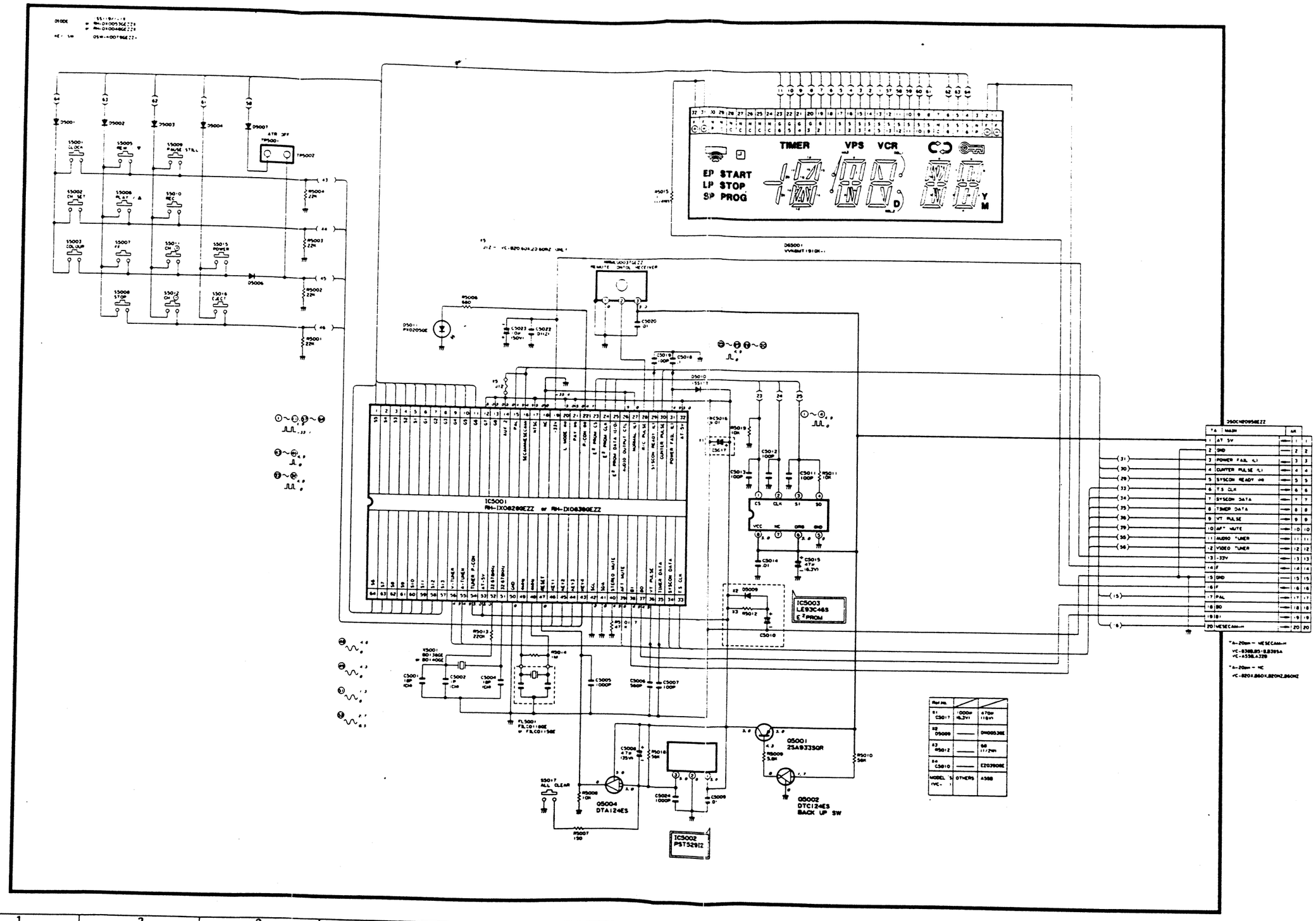
VC-A32B,VC-A55B

HEAD AMP. CIRCUIT (VC-A55B)

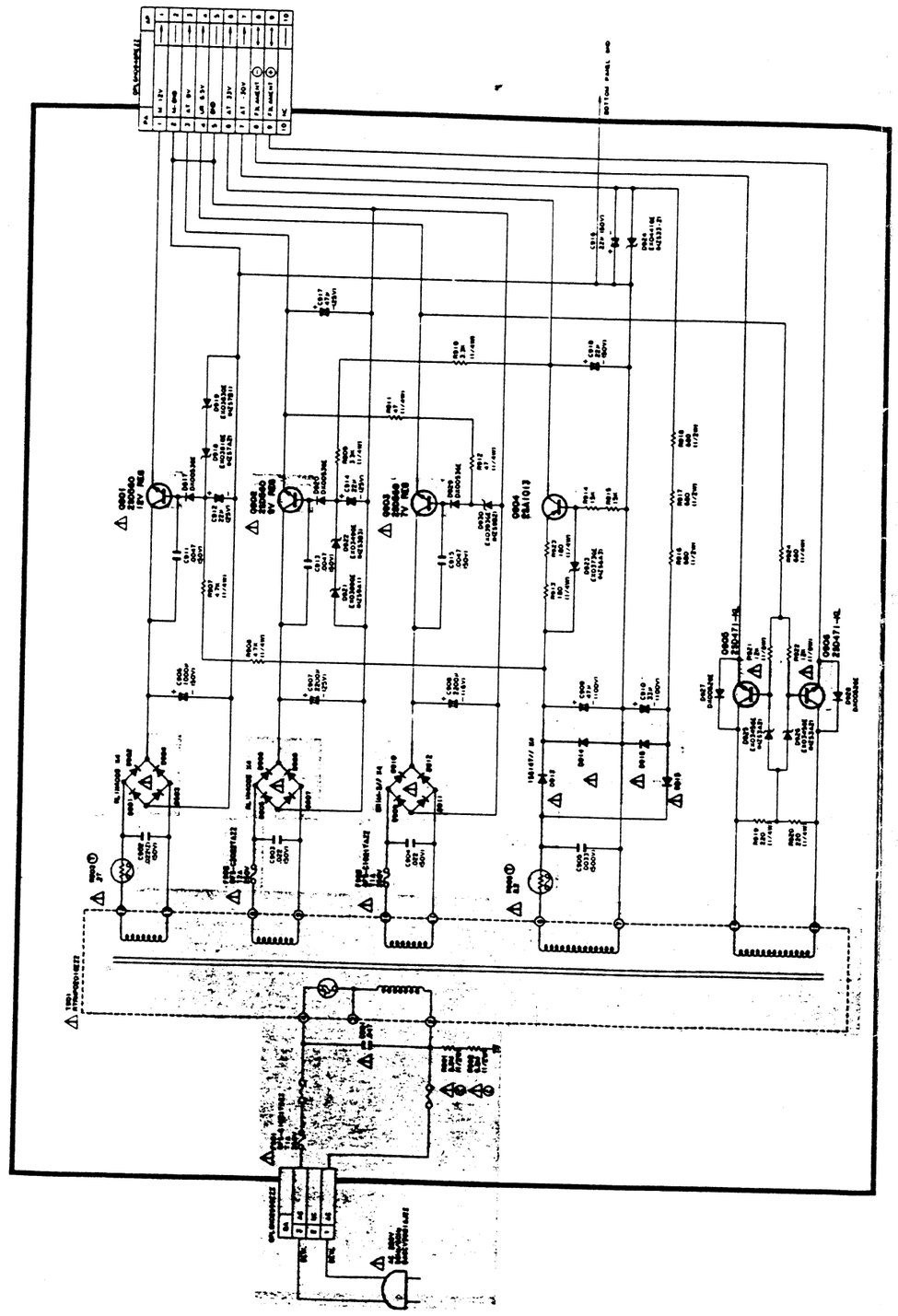


VC-A32B,VC-A55B

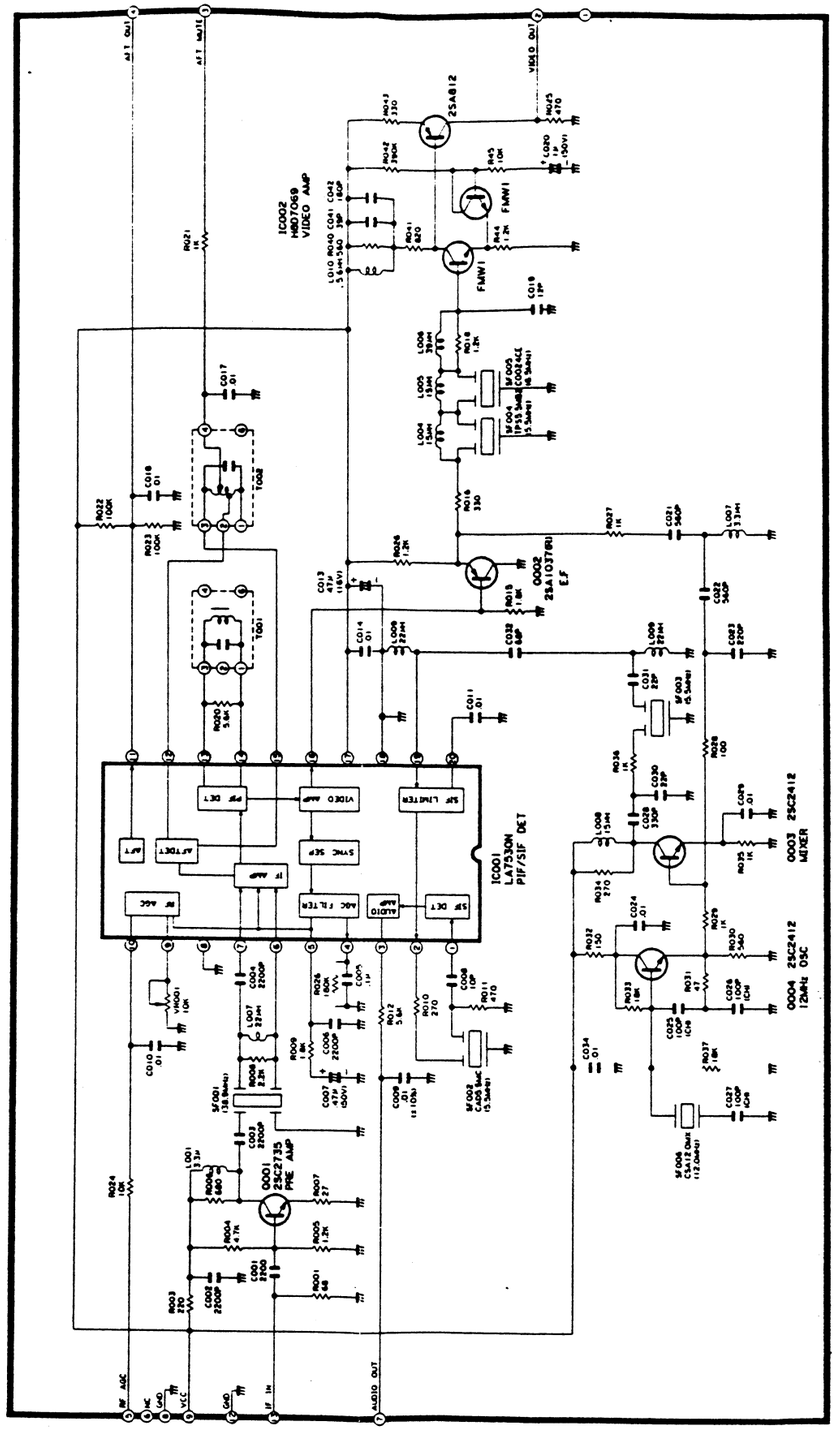
TIMER CIRCUIT



POWER CIRCUIT

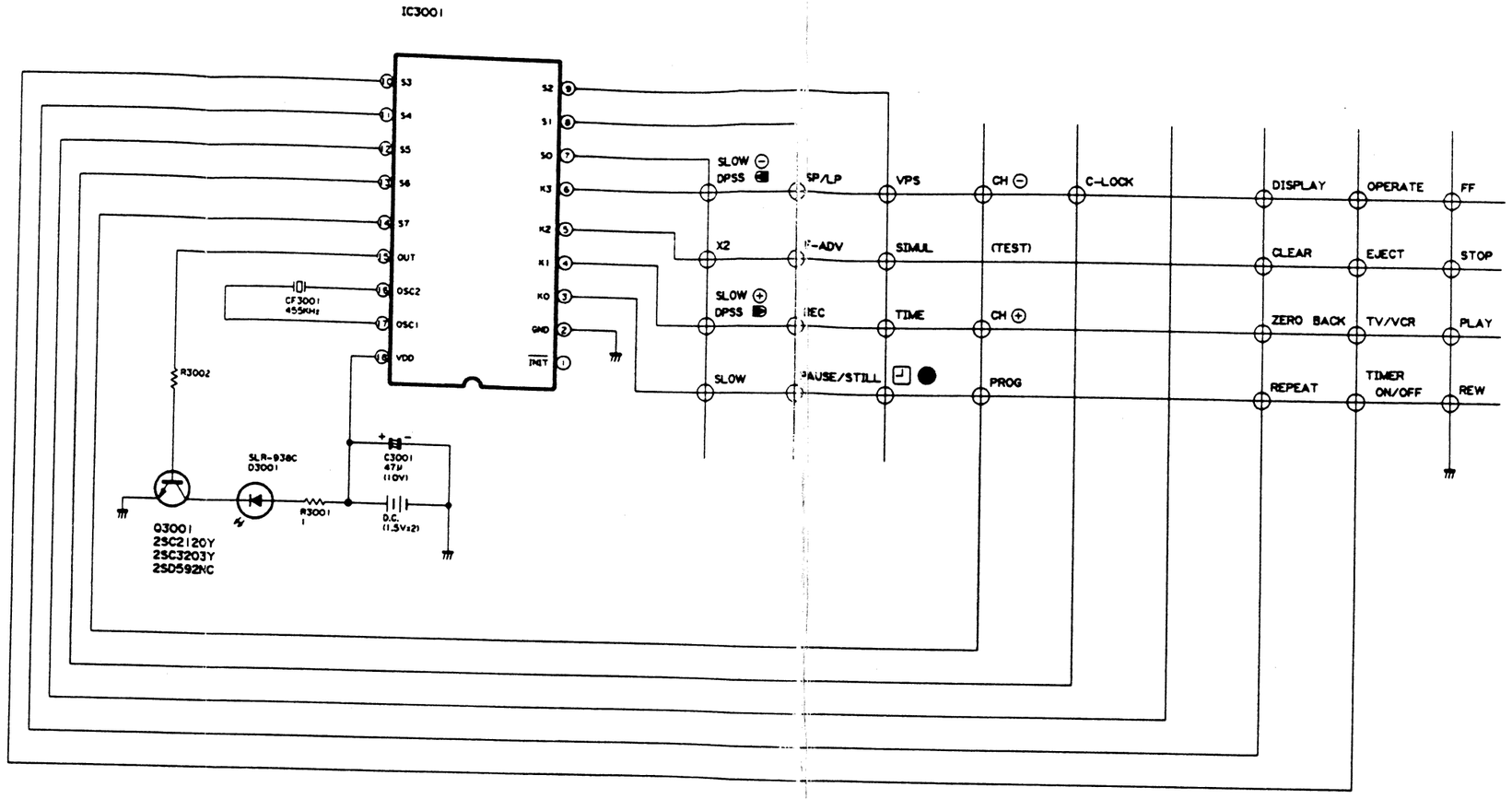


IF PACK

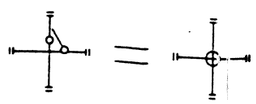


VC-A32B,VC-A55B

INFRARED REMOTE CONTROL CIRCUIT

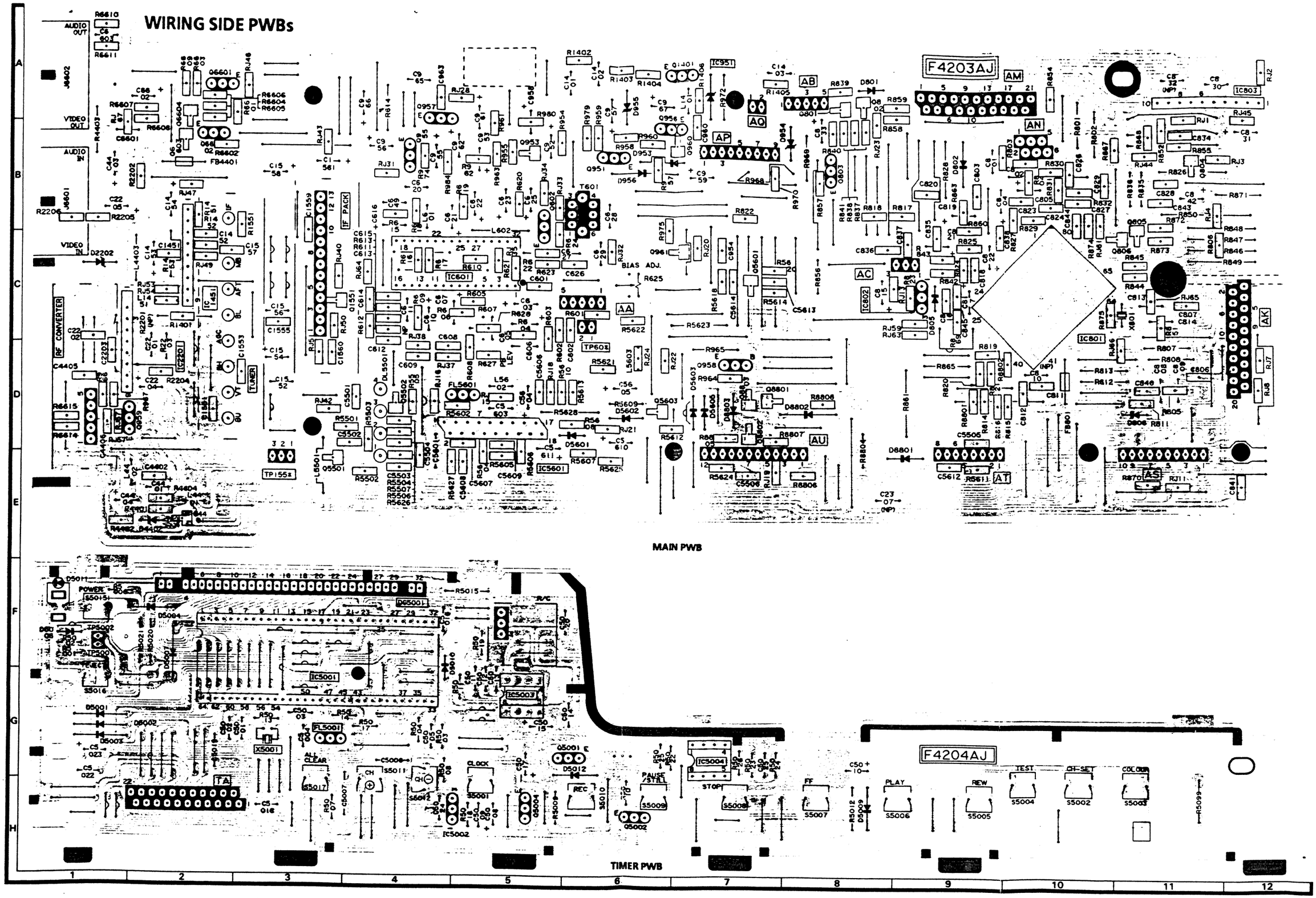


CODE	G09860E	G09610E	G09620E	G09960E	G10010E	G10108E
MODEL	A33GM A36SV A36SM A36YM A32B A2345M A37GM A546M A529M,YM A4545M,YM	A36HMLM B20X B38B	B20NZ	B60X B51B	B60NZ	V/WHS LY1/A
SP/LP	○	×	×	○	○	×
VPS	○	×	×	×	×	×
TV/VCR	×	×	○	×	○	×

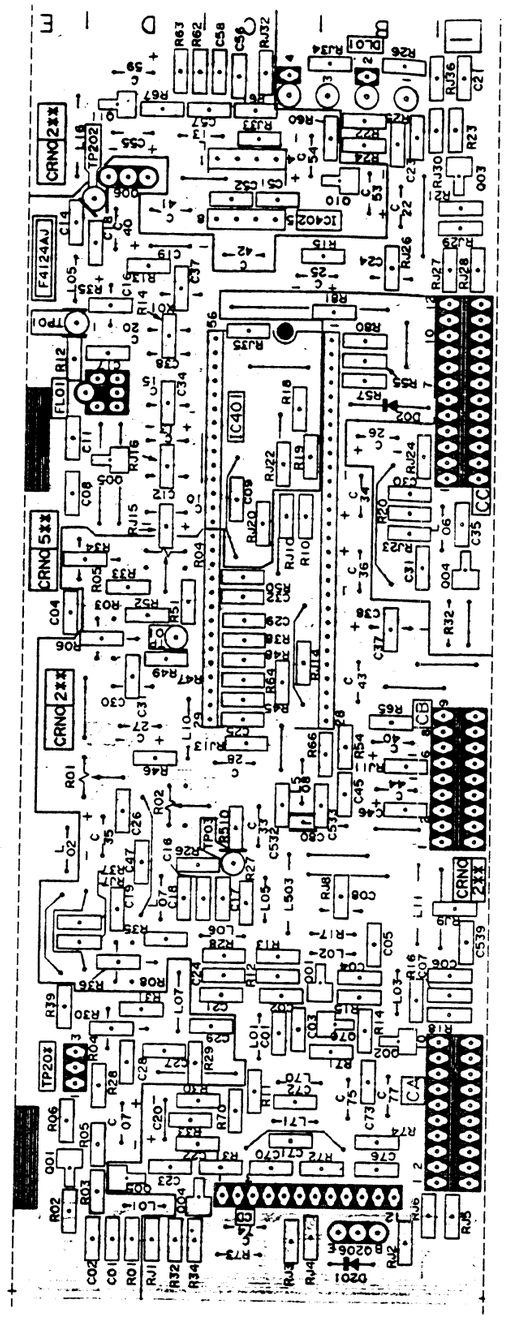


VC-A32B,VC-A55B

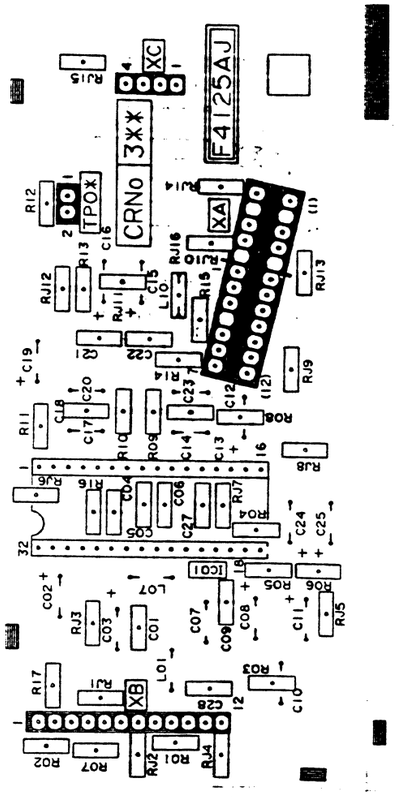
WIRING SIDE PWBs



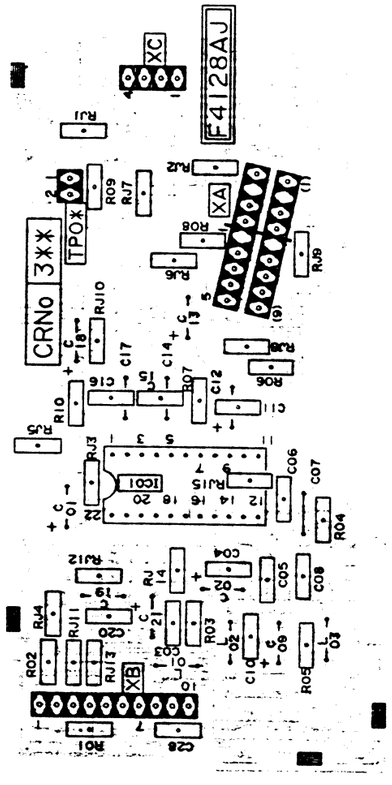
VC-A32B,VC-A55B



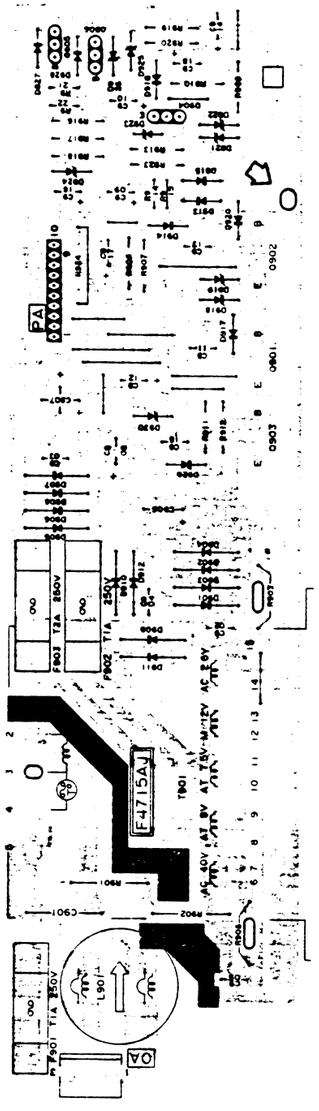
Y/C PWB



HEAD AMP. PWB
(VC-A55B)



HEAD AMP. PWB
(VC-A32B)



POWER PWB

REPLACEMENT PARTS LIST

PARTS REPLACEMENT

Many electrical and mechanical parts in video cassette camcorder have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by ⚠and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. PRICE CODE

⚠MARK:SAFETY RELATED PARTS

★ MARK : SPARE PARTS-DELIVERY SECTION

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	*	Description	Code
MAIN CIRCUIT				
	DUNTK4203TEV4	J	Main Board Assembly (VC-A32B)	—
	DUNTK4203TEV5	J	Main Board Assembly (VC-A55B)	—
TRANSISTORS				
Q602	VS2C3939SQR-1	J	2C3939SQR	AC
Q803	VS2SC2001LK-1	J	2SC2001LK	AA
Q804, 805, 960, 5601, 6603	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q806, 2251	VSDTA124EK/-1	J	DTA124EK	AB
Q951	VS2SB1117KU1E	J	2SB1117K	AE
Q953, 961, 5603, 8802	VSDTC144EK/-1	J	DTC144EK	AB
Q955, 958	VS2SA950-Y/1E	J	2SA950(Y)	AD
Q956, 957	VS2SD471-KL1E	J	2SD471(K)	AC
Q1401, 6602	VS2C1740SQR1E	J	2C1740S	AC
Q4401	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q6601, 8801, 1551	VSDTC144ES/-1	J	DTC144ES (VC-A55B)	AB
Q6604, 8803	VSDTA144EK/-1	J	DTA144EK (VC-A55B)	AC
INTEGRATED CIRCUITS				
IC601	VHiBA7765AS-1	J	BA7765AS	AL
IC801	RH-iX0819GEZZ	J	iX0819GE-08	AY
IC803	VHiBA6209//1E	J	BA6209	AG
IC951	VHiUZT33///-1	J		AC
IC1451	RH-iX0203GEZZ	J	LA7910	AE
IC2201	VHiBA7021//-1	J	BA7021	AE
IC5601	VHiBA7025L/-1	J	BA7025L	AP
DIODES AND CRYSTAL				
D802, 806, 953, 956, 5601, 5602, 8801, 8802, 8803	VHD1SS119//-1	J	1SS119 (VC-A55B) (VC-A55B) (VC-A55B)	AB
D805	RH-EX0721GEZZ		Zener Diode	AA
D954	RH-EX0302CEZZ	J	Zener Diode(UZ-6.8BSA)	AA
D955	RH-EX0374GEZZ	J	Zener Diode(HZS6B1)	AA
D2202, 4402	RH-EX0168GEZZ	J	Zener Diode(HZS15EB2)	AA
X801	RCRSB0169GEZZ	J	Crystal 6.00MHz	AF
CONTROL				
R625	RVR-M4425GEZZ	J	470K(B), Bias Adj.	AB
COILS AND TRANSFORMER				
FL5601	RFiLC0120GEZZ	J	Filter	AD
L601	VP-YF822J0000	J	8.2mH, 5%	AC
L602	VP-CF221K0000	J	220µH, 10%	AB
L1401	VP-XF120K0000	J	12µH, 10%	AB
L4401, 5603	VP-MK221K0000	J	220µH, 10%	AB
L4403	VP-DF100K0000	J	10µH, 10%	AB
L5602	VP-YF153J0000	J	15mH, 5%	AC
T601	RTRNH0053GEZZ	J	Oscillation. Transformer	AE

Ref. No.	Part No.	*	Description	Code
CAPACITORS				
C605, 649	VCQYTA1HM123J	J	0.012µF, 50V,5%, Mylar (VC-A55B)	AA
C610	VCEAGA1AW107M	J	100µF, 10V, 20%, Electrolytic	AB
C611, 2201	VCE9EA1HW105M	J	1µF, 50V, 20%, Electrolytic (N.P)	AC
C620	VCQYWA1HA153J	J	0.015µF, 50V, 5%, Mylar	AA
C628	VCQPSA2AA562J	J	5600pF, 100V, 5%, Polypro Film	AC
C629	VCRYPA1HA221J	J	220pF, 50V , 5%, Mylar	AB
C801, 808	VCQYTA1HM104K		0.1µF, 50V, 10%, Mylar	AC
C809	VCQYTA1HM333K	J	0.033µF, 50V, 10%, Mylar	AA
C810, 817	VCEAGA0JW107M	J	100µF, 6.3V, 20%, Electrolytic	AB
C830	RC-KZ0029GEZZ	J	0.1µF, 25V, Ceramic	AA
C831, 961, 4401, 5611	VCEAGA1CW107M	J	100µF, 16V, 20%, Electrolytic	AB
C832, 2307	VCE9EA1HW335M	J	3.3µF, 50V, 20%, Electrolytic (N.P)	AB
C1401, 1402	VCFYSA1HB334J	J	0.33µF, 50V, 5%, Mylar	AB
C1552	VCFYSA1HB104J	J	0.1µF, 50V, 5%, Mylar	AB
C1558	VCEA2A1CW227M	J	220µF, 16V, 20% Electrolytic	AB
C4403	VCEA2A0JW477M	J	470µF, 6.3V, 20%, Electrolytic	AB
C5603	VCQYTA1HM273J	J	0.027µF, 50V, 5%, Mylar	AB
C6612	RC-QZA223TAYJ	J	0.022µF, 50V, 5%, Mylar	AB
MISCELLANEOUS				
	RiFU-0567GEZZ	J	IF Pack	AX
	RCNVR0111GEZZ	J	RF Converter	BA
	VTUVTSS6SZ///	J	VHF Tuner	BA
FB801	RBLN-0013GEZZ	J	Balun	AB
FB4401	RBLN-0043CEZZ	J	Balun	AB
J6601, 6602	QJAKE0159GEZZ	J	Jack	AC
	QPLGN0979GEZZ	J	Plug, 9pin (AS)(VC-A32B)	AC
	QPLGN0879GEZZ	J	Plug, 8pin (AT)	AB
	QPLGN1079GEZZ	J	Plug, 10pin (AS) (VC-A55B)	AB
	QPLGN0547REZZ	J	Plug, 5pin (AA)	AA
	QPLGN0247REZZ	J	Plug, 2pin (TP601-602, TP1551-1552)	AA
	QPLGN0347REZZ	J	Plug, 3pin (AC)	AA
	QPLGN1279GEZZ	J	Plug, 12pin (AU)	AC

Ref. No.	Part No.	*	Description	Code
	QPLGN0447REZZ	J	Plug, 4pin (AB)	AA
	QPLGN0947REZZ	J	Plug, 9pin (AP)	AB
	QSOCN2194GEZZ	J	Socket, 21pin (AM)	AD
	QSOCN0694GEZZ	J	Socket, 6pin (AN)	AB
	QSOCN2094GEZZ	J	Socket, 20pin (AK)	AD
Y/C CIRCUIT				
	DUNTK4124TEV4		Y/C Board Assembly (VC-A32B)	—
	DUNTK4124TEV5		Y/C Board Assembly (VC-A55B)	—
TRANSISTORS				
Q201, 202, 204, 210	VS2SC2412KQ-1	J	2SC2412KQ	AA
Q205	VSDTC144EK/-1	J	(VC-A55B)	AB
Q211, 270, 501	VS2SA1037KQ-1	J	2SA1037KQ	AA
Q506	VSDTC144ES/-1	J	DTC144ES	AB
INTEGRATED CIRCUITS				
IC401	VHiHA8285AN-1	V	HA8285AN	BB
IC402	VHiMSM7401R-1	J	MSM7401RS	AG
DIODE AND CRYSTAL				
D202	VHD1SS119//-1	J	1SS119	AB
X501	RCRSB0168GEZZ	J	Crystal, 4.43MHz	AF
CONTROLS				
R201, 202, 203	RVR-M4417GEZZ	J	22k(B), PB-Y Adj.	AB
R204	RVR-M4415GEZZ	J	10k(B), Deviation Adj.	AB
R205	RVR-M4374GEZZ	J	22k(B), Carrier Adj.	AB
COILS AND FILTERS				
DL501	RCiLZ0340GEZZ	V	Dlay Line	AM
FL501	RCiLF0245GEZZ	J	4.43 Block Filter	AD
L201	VP-XF150K0000	J	15µH, 10%	AB
L202	VP-XF330K0000	J	33µH, 10%	AB
L203	VP-XF120K0000	J	12µH, 10%	AB
L205, 210, 271, 507	VP-XF151K0000	J	150µH, 10% (VC-A55B)	AB

Ref. No.	Part No.	*	Description	Code
L206, 213	VP-XF560K0000	J	56µH, 10%	AB
L207	VP-XF820K0000	J	82µH, 10%	AB
L210	VP-XF101K0000	J	100µH, 10% (VC-A32B)	AB
L216	VP-XF1R2K0000	J	1.2µH, 10%	AB
L501	VP-MK561K0000	J	560µH, 10%	AB
L505	VP-XF100K0000	J	10µH, 10%	AB
L506	VP-XF3R9K0000	J	3.9µH, 10% (VC-A55B)	AB
L508	VP-XF180K0000	J	18µH, 10%	AB

CAPACITORS

C208, 280, 512, 522, 540	RC-KZ0017GEZZ	J	0.047µF, 25V, 10%	AA
C228	VCRYPA1HA391J	J	390pF, 50V, 5%, Mylar (VC-A32B)	AB
C241, 242, 243, 274, 275, 277	RC-KZ0019GEZZ	J	0.1µF, 25V, 10%, (VC-A55B) (VC-A55B)	AA
C243	VCE9EA1HW334M		0.33µF, 50V, 20%, Electrolytic(N.P) (VC-A32B)	AC
C515	VCTYPA1EX333M	J	0.033µF,25V,20%, Mylar	AA
C524	VCQYTA1HM223K	J	0.022µF, 50V, 10%, Mylar	AB

MISCELLANEOUS

	QPLGN0947REZZ	J	Plug, 9pin (CD) (VC-A32B)	AB
	QPLGN0347REZZ	J	Plug, 3pin (TP2201)	AA
	QSOCN0979GEZZ	J	Socket, 9pin (CA) (VC-A32B)	AB
	QSOCN0879GEZZ	J	Socket, 8pin (CB)	AC
	QSOCN1079GEZZ	J	Socket, 10pin (CA) (VC-A55B)	AC
	QPLGN1247REZZ	J	Plug, 12pin (CD) (VC-A55B)	AB
	QSOCN1279GEZZ	J	Socket 12pin (CC)	AC

HEAD AMP CIRCUIT

DUNTK4128TEV1	Head Amp Board Assembly (VC-A32B)	—
DUNTK4125TEV2	Head Amp Board Assembly (VC-A55B)	—

Ref. No.	Part No.	*	Description	Code

INTEGRATED CIRCUITS

IC301	VHiBA7172S/-1	J	BA7172S (VC-A32B)	AH
IC301	VHiBA7279S/-1	J	BA7279S (VC-A55B)	AL

COILS

L301, 302, 307	VP-MK101K0000	J	100µH 10% (VC-A32B) (VC-A55B)	AB

CAPACITORS

C307, 310	VCFYSA1HB473J	J	0.047µF, 50V, 5%, Mylar (VC-A55B)	AA
C313,	RC-KZ0029GEZZ	J	0.1µF, 25V, -20~+80%, (VC-A55B)	AA
	or			
314, 317, 318	RC-KZ0018GEZZ	J	(VC-A55B)	AA
C330	RC-KZ0019GEZZ	J	(VC-A55B)	AA
	or			
	RC-KZ0029GEZZ	J		AA

MISCELLANEOUS

	QPLGN0948REZZ	J	Plug, 9pin (XA) (VC-A32B)	AB
	QSOCN0532REZZ	J	Socket, 5pin (XB) (VC-A32B)	AB
	QPLGN0248REZZ	J	Plug, 2pin (TP301-302)	AA
	QPLGN1248REZZ	J	Plug, 12pin (XB) (VC-A55B)	AB
	QPLGN0732REZZ	J	Socket, 7pin (XA) (VC-A55B)	AC

TIMER CIRCUIT

DUNTK4204TEV7	Timer Board Assembly (VC-A32B)	—
DUNTK4204TEV8	Timer Board Assembly (VC-A55B)	—

TRANSISTORS

Q5001	VS2SA933SQR1E	J	2SA933SQ	AB
Q5002	VSDTC124ES/-1	J	DTC124ES	AB
Q5004	VSDTA124ES/-1	J	DTA124ES	AB

INTEGRATED CIRCUITS

IC5001	RH-iX0838GEZZ	V	HD404729C06S	AZ
IC5002	VHiPST529i2-1	J	IC-PST529i-2	AD
IC5003	VHiLE93C46S-1	J	LE93C46S1	AF

Ref. No.	Part No.	*	Description	Code
DIODES AND CRYSTAL				
D5001, 5002, 5003, 5004, 5006, 5007, 5009, 5010	VHD1SS119//-1	J	1SS119 (VC-A55B)	AB
D5011	RH-PX0205GEZZ	J	Photo diode	AB
X5001	RCRSB0138GEZZ	J	Crystal, 32kHz	AD
FILTER				
FL5001	RFiLC0115GEZZ	J	Filter	AC
CAPACITORS				
C5010	RC-EZ0390GEZZ	J	(VC-A55B)	AF
C5017	VCEAGA0JW108M	J	1000µF, 6.3V, 20%, Electrolytic (VC-A32B)	AC
C5017	VCEAGA1JW477M	J	470µF, 16V, 20%, Electrolytic (VC-A55B)	AC
C5018,	RC-KZ0018GEZZ	J	0.1µF,25V, -20~+80%, Ceramic	AA
MISCELLANEOUS				
	QPLGZ0252GEZZ	J	Plug, 2pin (TP)	AA
	RRMCU0037GEZZ	J	Infrared Remote Control Receiver	AL
DG5001	VVK6MT191GK-1	J	Fluorescent Display Tube	AU
SC5001	QSOCN2095GEZZ	J	Socket, 20pin (TA)	AD
S5001,	QSW-K0079GEZZZ	J	Switch, Clock	AB
5002,			Switch, Channel Set	
5003,			Switch, Colour	
5005,			Switch, Rewind	
5006,			Switch, Play	
5007,			Switch, Fast Forward	
5008,			Switch, Stop	
5009,			Switch, Pause	
5010,			Switch, Recording	
5011,			Switch, Channel up	
5012,			Switch, Channel Down	
5015,			Switch, Power	
5016,			Switch, Eject	
5017			Switch, All Clear	
POWER CIRCUIT				
	DUNTK4715TEV0		Power Board Assembly	—

Ref. No.	Part No.	*	Description	Code
TRANSISTORS				
⚠ Q901, ⚠ 902, ⚠ 903	VS2SD560-7/1E	J	2SD560	AK
⚠ Q904	VS2SA1013//1E	J	2SA1013	AD
⚠ Q905, ⚠ 906	VS2SD471-KL1E	J		AC
DIODES				
⚠ D901, ⚠ 902, ⚠ 903, ⚠ 904, ⚠ 905, ⚠ 906, ⚠ 907, ⚠ 908	VHDRL1N4003-1	J	RL1N4003	AA
⚠ D909, ⚠ 910, ⚠ 911, ⚠ 912	VHDSR1M-2//-1	J	SR1M-2	AA
⚠ D913, ⚠ 914, ⚠ 915, ⚠ 916, D917, 920, 929	VHD1SS147//-1	J	1SS147	AA
	RH-DX0053GEZZ	J	1SS132	AA
D918	RH-EX0381GEZZ	J	Zener Diode	AA
D919	RH-EX0383GEZZ	J	Zener Diode	AA
D921	RH-EX0389GEZZ	J	Zener Diode	AA
D922	RH-EX0349GEZZ	J	Zener Diode	AA
D923	RH-EX0373GEZZ	J	Zener Diode	AA
D924	RH-EX0441GEZZ	J	Zener Diode	AA
D925, 926	RH-EX0345GEZZ	V	Zener Diode	AB
D927, 928	RH-DX0052GEZZ	J		AB
D930	RH-EX0393GEZZ	V	Zener Diode	AB
TRANSFORMER				
⚠ T901	RTRNP0201GEZZ	V	Power Transformer	AZ
CAPACITORS				
C901	RC-FZ004SGEZZ	J	0.047µF, 250V	AF
C905	VCKYPA2HB332K	J	3300pF, 500V, 10%, Ceramic	AB
C906	VCEAVH1HN108M	V	1000µF, 50V, 20%, Electrolytic	AK
C907	VCEAVH1EN228M	J	2200µF, 25V 20%, Electrolytic	AE

Ref. No.	Part No.	*	Description	Code
C908	VCEAVA1CN228M	V	2200µF, 16V, 20%, Electrolytic	AH
C909	VCEAVA2AN476M	V	47µF, 100V, 20%, Electrolytic	AE
C910	VCEAVA2AN336M	V	33µF, 100V, 20%, Electrolytic	AE
RESISTORS				
⚠ R901, ⚠ 902	VRC-UA2HG685K	J	6.8M ohm, 1/2W, 10% Solid	AA
⚠ R903	RR-XZ0036GEZZ	J	0.27 ohm, Fuse Resistor	AC
⚠ R906	RR-XZ0040GEZZ	J	8.2 ohm, Fuse Resistor	AD
MISCELLANEOUS				
⚠ F901, ⚠ 902	QFS-C1021TAZZ	J	Fuse T1A. 250V	AE
⚠ F903	QFS-C2022TAZZ	J	Fuse T2A.250V	AE
	QPLGN0269GEZZ	J	Plug, 2pin (OA)	AB
	QPLGN0948REZZ	J	Plug, 9pin (PA)	AB
THE OTHER PARTS				
	QCNW-2702GEZZ		75 ohm ANT Cable	AK
	TINS-2222AJZZ	V	Instruction Book (VC-A32B)	AG
	TINS-2223AJZZ	V	Instruction Bookl (VC-A55B)	AG
	QCACCV2001AJZZ	V	AC Cord	AQ
	RRMCG0960GESA	V	Infrared Remote control unit (VC-A32B)	AV
	RRMCG0963GESA		Infrared Remote control unit (VC-A55B)	BF
MECHANISM CHASSIS PARTS				
1	PGIDS0023GEFW	J	Retaining Guide	AE
2	MSPRC0142GEFJ	J	Retaining Guide Spring	AA
3	MLEVC0022GEZZ	J	Half-Loading Lever	AF
4	MSPRT0270GEFJ	J	Half-Loading Lever Spring	AA
5	MLEVF0284GEFW	J	Half-Loading Drive Lever	AC
6	MSPRT0269GEFJ	J	Half-Loading Reciprocating Spring	AA
7	MLEVF0283GEZZ	J	Half-Loading Reciprocating Lever	AB
8	MSPRC0144GEFJ	J	Azimuth Spring	AA
9	RHEDU0070GEZZ	J	Audio/Control Head Ass'y	AS
10	PCAPS1015GEZZ	J	Retaining Guide Cap	AA
11	QPWBF3777GEZZ	J	Audio/Control Head PWB	AB
12	MLEVF0292GEZZ	J	Audio/Control Head Arm	AD
13	MSPRD0087GEFJ	J	Audio/Control Head Arm Spring	AA
14	LHLDZ1606GEZZ	J	Loading Block Holder Ass'y	AC
15	QPRBF2886GEZZ	J	Loading Block PWB	AD
16	RMOTM1049GEZZ	J	Loading Motor	AM
17	QPLGN0448REZZ	J	Plug, 4pin (MG)	AA
18	QSW-R0026GEZZ	J	Cam Switch	AE
19	NGERW1032GEZZ	J	Worm Wheel	AC
20	NPLYV0133GEZZ	J	Loading Motor Pulley	AC
21	NBLTK0058GE00	J	Loading Belt	AA
22	NGERW1031GEZZ	J	Worm Ass'y	AC
23	NSFTG0045GEFJ	J	Worm Shaft	AB
24	NGERH1129GEZZ	J	Master Cam	AC
25	MLEVF0281GEZZ	J	Pinch Roller Lever Ass'y	AN
26	MLEVF0348GEZZ	J	Relay Shifter Lever	AD
27	MLEVC0033GEZZ	J	Reverse Guide	AG
28	MSPRD0086GEFJ	J	Reverse Guide Spring	AA
29	RMOTN2047GEZZ	J	Capstan D.D. Motor	BE
30	MLEVP0136GEZZ	J	Slow Brake Lever	AA
31	MSPRT0329GEFJ	J	Slow Brake Spring	AA
32	MSPRC0151GEFJ	J	Reverse Guide Spring	AA
33	MLEVF0379GEZZ	J	Relay Gear Drive Lever	AD
34	MSLIF0043GEZZ	J	Brake Shifter	AK
35	NSFTZ0068GEFD	J	Brake Lock Shaft	AC
36	MSPRC0143GEFJ	J	Absorber Plate Spring	AB
37	MSPRT0274GEFJ	J	Video Search Spring	AB
38	MLEVP0181GEZZ	J	Video Search Brake Lever	AA
39	MLEVP0131GEZZ	J	Video Search Reciprocating Lever	AC
40	RPLU-0083GEZZ	J	Brake Solenoid Ass'y	AF
41	NDAIV1046GEZZ	J	Take-Up Reel Disk Ass'y	AG
42	NGERH1128GEZZ	J	Idler Gear Ass'y	AN
43	NPLYV0134GEZZ	J	Reel Pulley	AC
44	MSPRD0085GEFJ	J	Shifter Spring	AB
45	PCOVP1018GEZZ	J	Shifter Spring Cover	AC
46	LHLDP1092GEZZ	J	Cassette LED Holder	AE
47	RH-PX0180GEZZ	J	Cassette LED	AD
48	QPWBF2977GEZZ	J	Reel Sensor PWB	AK
49	RH-PX0181GEZZ	J	Reel Sensor	AE
50	LCHSS0016GEZZ	J	Reel Block Chassis	AL
51	MLEVP0134GEZZ	J	Tension Adjusting Lever	AC
52	MLEVP0195GEZZ	J	Tension Release Lever	AC
53	MLEVP0132GEZZ	J	Back Tension Lever	AC
54	MSPRT0273GEFJ	J	Back Tension Lever Spring	AB
55	NDAIV1047GEZZ	J	Supply Reel Disk Ass'y	AH
56	MSPRT0272GEFJ	J	Main Brake Spring	AC
57	MLEVP0135GEZZ	J	Intermediate Lever	AC
58	MLEVP0129GEZZ	J	Main Take-Up Brake Lever	AE
59	MLEVP0128GEZZ	J	Main Supply Brake Lever	AE
60	NGERH1121GEZZ	J	Loading Relay Gear	AA

Ref. No.	Part No.	*	Description	Code
61	MSPRT0271GEFJ		Loading Reciprocating Spring	AA
62	NGERH1120GEZZ	J	Take-Up Loading Gear	AA
63	MLEVF0304GEZZ	J	Take-Up Loading Arm Ass'y	AC
64	NGERH1119GEZZ	J	Supply Loading Gear	AA
65	MLEVF0303GEZZ	J	Supply Loading Arm Ass'y	AC
66	LCHSM0108GEZZ	J	Main Chassis Ass'y (VC-A32B)	AR
66	LCHSM0125GEZZ	J	Main Chassis Ass'y (VC-A55B)	AS
67	LBNDK1002GEZZ	J	Tension Band Ass'y	AD
68	LHLDZ1607GEZZ	J	Tension Spring Hook Plate	AA
69	MSPRT0275GEFJ	J	Tension Spring	AA
70	MLEVF0291GEZZ	J	Tension Arm Ass'y	AF
72	MSLiF0049GEFW	J	Take-Up Pole Base Slider	AB
73	LPOLM0037GEZZ	J	Take-Up Pole Base Ass'y	AG
74	NROLP0104GEZZ	J	Guide Roller Ass'y	AE
75	MSLiF0048GEFW	J	Supply Pole Base Slider	AB
76	LPOLM0036GEZZ	J	Supply Pole Base Ass'y	AG
77	PGiDM0066GEZZ	J	Take-Up Loading Rail	AB
78	PGiDM0067GEZZ	J	Supply Loading Rail	AB
79	NSFTL0563GEFW	J	Supply Impedance Roller Innor	AC
80	PGiDH0031GEFW	J	Supply Impedance Roller Flange	AA
81	NROLP0084GEZZ	J	Supply Impedance Roller	AC
82	RHEDT0031GEZZ	J	Full Erase Head Ass'y	AH
84	LANGA0054GEZZ	J	Supply Reel Retainer Ass'y	AD
85	NBLTK0059GE00	J	Reel Belt	AB
86	MLEVP0146GEZZ	J	Auxiliary Fast-Forward Brake Lever	AE
87	MSPRT0282GEFJ	J	Auxiliary Fast-Forward Brake Spring	AB
89	DDRMU0002HE39	J	Upper Drum Ass'y (VC-A32B)	BB
89	DDRMU0004HE30	J	Upper Drum Ass'y (VC-A55B)	BG
90	PGiDC0044GEFW	J	Drum Base	AK
91	DDRML0012HE01	J	Lower Drum Ass'y (VC-A32B)	BE
91	DDRML0012HE00	J	Lower Drum Ass'y (VC-A55B)	BB
92	QBRSK0025GEZZ	J	Earth Brush Ass'y	AD
93	RMOTP1107GEZZ	J	Drum D.D. Motor Ass'y	AW
97	QCNW-6573GEZZ	J	Full Flat Cable	AK
100	QSOCN0534REZZ	J	Socket, 5pin (MF)	AC
101	VRS-TW2ED221J	J	220 ohm, 1/4W, 5%, Oxide Film	AA

Ref. No.	Part No.	*	Description	Code
102	VCKYTV1HB102K	J	0.001μF, 50V, 10%, Ceramic	AA
103	VRS-TV1JD473J	J	47 ohm, 1/16W, 5%, Oxide Film	AA
105	LANGA0051GEFW	J	Take-Up Reel Disk Catch Holder	AB
106	PGiDS0027GEZZ	J	Supply Impedance Roller Flange L	AA
111	LPOLP0003GEZZ	J	Release Pin Angle	AA
120	CCHSS0018GE02	J	Reel Block Ass'y	AZ
125	QPLGN0947REZZ	J	Plug, 9pin	AB
128	CLEVP0208GE00	J	AHC Lever Ass'y	AE
129	CLEVP0209GE00	J	AHC Roller Ass'y	AG
135	94SSEE0193721A	J	Drum IC	AU
136	94SSEE0193731A	J	Capstan IC	AU
137	PSPAZ0315GEZZ	J	Inertia Moment Plate	AA
138	PCAPS1018GEZZ	J	Slow Brake Shaft Cap	AA

CASSETTE HOUSING CONTROL PARTS

	CHLDX3066GE56	J	Cassette Housing Control Assembly	AY
301	PGiDM0069EG00	J	Down Guide	AC
302	QSW-F0034GEZZ	J	Cassette Erase Protection Switch	AC
303	LHLDX1014GE00	J	Cassette Housing Frame (Right)	AC
304	MARMP0052GE00	J	Cassette Cover Open Arm	AB
306	NGERW1036GEZZ	J	Phase Gear	AA
308	MSPRD0088GEFJ	J	Drive Gear Spring (Right)	AA
309	NGERW1034GEZZ	J	Drive Gear (Right)	AB
310	MSPRT0277GEFJ	J	Reciprocating Spring	AA
311	NGERW1033GEZZ	J	Worm Wheel Gear	AB
312	LANGF9355GEFW	J	Worm Bracket	AB
313	NBRGP0013GEZZ	J	Bearing	AA
314	MLEVP0142GE00	J	Open Lever	AA
315	MSPRD0091GEFJ	J	Open Lever Spring	AA
316	MLEVP0192GEZZ	J	Switching Lever	AB
317	MSPRT0280GEFJ	J	Switching Lever Spring	AA
318	NSFTD0016GEZZ	J	Worm Shaft Ass'y	AE
319	MLEVP0140GEZZ	J	Clutch Lock Lever	AA
320	MSPRT0279GEFJ	J	Clutch Lock Lever Spring	AA
321	MLEVP0139GEZZ	J	Clutch Release Lever	AA
322	MSPRD0092GEFJ	J	Clutch Release Lever Spring	AA
323	MLEVP0138GEZZ	J	Clutch Lever	AA
324	NPLYV0135GEZZ	J	Pulley	AA
325	NBLTK0060GE00	J	Cassette Loading Belt	AB
326	LANGF9354GEFW	J	Upper Plate	AD
327	LHLDX1011GE00	J	Slider Holder (Left)	AB
328	MSPRP0135GEFJ	J	Cassette Spring	AB
330	MSPRT0281GEFJ	J	Slider Lock Spring	AA

Ref. No.	Part No.	*	Description	Code
331	MSLIF0044GEFW	J	Slider	AF
332	MLEVP0137GE00	J	Lock Release Lever	AA
333	MSPRD0093GEFJ	J	Lock Release Lever Spring	AA
334	MLEVP0143GE00	J	Slider Lock Cover	AA
335	LANGF9356GEFW	J	Slider Lock (Right)	AA
336	LHLDX1010GE00	J	Slider Holder (Right)	AB
337	NGERW1035GEZZ	J	Drive Gear (Left)	AB
338	MSPRD0089GEFJ	J	Drive Gear Spring (Left)	AA
339	LHLDX1015GE00	J	Cassette Housing Frame (Left)	AC
340	NSFTD0015GEFD	J	Main Shaft	AD
341	QPWBF2894GEZZ	J	End Sensor PWB	AB
342	RH-PX0176GEZZ	J	Phototransistor	AE
343	QPWBF3975GEZZ	J	Start Sensor PWB	AC
344	QSW-F0040GEZZ	J	Cassette Switch	AD
345	ZTAPEZ790008E	J	Rubber Mat	AA
347	QSOCN0595GEZZ	J	Socket, 5 pin	AB
349	VS2SA937-Q/-1	J	Transistor	AC
350	VRD-SA2BB153J	J	15k ohm, 1/8W, 5%, Carbon	AA
351	VRD-SA2BB223J	J	22k ohm, 1/8W, 5% Carbon	AA
354	VRD-SA2BB563J	J	56k ohm, 1/8W, 5%, Carbon	AA
355	RC-KZ0028GEZZ	J	0.047µF, 16V, 20% Ceramic	AA
356	QCNW-4789GEZZ	J	Connecting Cord	AF
401	LX-WZ1020GE00	J	Cut Washer (4.2W-6.0-0.5)	AA
402	LX-HZ3046GEFD	J	Screw (B Tight BTN3P + 6S)	AA
403	NPLYV0137GEZZ	J	Coupling	AA
404	NPLYV0136GEZZ	J	Clutch	AA
405	NGERW1037GEZZ	J	Worm	AA
406	PSPAZ0380GEZZ	J	Spacer	AD

SCREWS, NUTS, AND WASHERS

201	XNFSD20-16000	J	Adjusting Nut	AA
202	XWHSD26-05060	J	Washer W2.6S-6-0.5	AA
203	XRESJ20-04000	J	E Ring-2	AA
204	LX-BZ3095GEFD	J	AC Head Screw	AA
205	XBPSD26P06000	J	Azimuth Adjusting Screw	AA
206	LX-BZ3096GEFD	J	Tilt Adjusting Screw	AA
207	XNFSD40-31000	J	Adjusting Nut (A/C Head)	AB
208	LX-WZ1048GEZZ	J	Washer W3.1-5.4-0.5	AA
209	LX-WZ1041GE00	J	Washer W2.6-6-0.5 (LM)	AA
210	XHPSD26P06WS0	J	Screw C2.6P + 6S	AA
211	XRESJ30-06000	J	E Ring-3	AA
212	XWHJZ45-02060	J	Washer PSW4.5-6-0.25	AA
213	LX-NZ3046GEFW	J	Adjusting Nut	AB
215	LX-WZ1003GE00	J	Washer CW2.1-5-0.5	AA
216	XRESJ12-03000	J	E Ring-1.2-T0.3	AA
217	XHPSD26P03000	J	Screw S2.6P + 3S (S Tight)	AA
218	XHPSD20P03000	J	Screw S2P + 3S (S Tight)	AA
219	XRESJ25-04000	J	E Ring-2.5	AA
220	XWHJZ25-05050	J	Washer W2.6P-5-0.5	AA
222	XWHJZ25-02050	J	Washer W2.6P-5-0.25	AA
223	LX-HZ3043GEZZ	J	Screw W2.6P + 6S	AA
224	LX-BZ3099GEZZ	J	Screw WSW2P + 11S (W5)	AB
225	LX-XZ3030GEFD	J	Screw M2 × 4	AC
226	XHPSD26P08WS0	J	Screw C2.6P + 8S	AA
227	XJPSD26P08WS0	J	B Tight Screw C2.6 + 8S	AA
228	XHPSD30P08WS0	J	Screw C3P + 8S	AA
229	LX-WZ1040GE00	J	Washer CW2.5-6-0.5	AA
230	XJBSD20P06000	J	B Tight Screw 2P + 6S	AA
231	LX-BZ3039GEFN	J	Screw W3P + 9S-Ni	AA
232	LX-HZ3056GEFD	J	Screw WSW3P + 10S-6W	AA
233	XBPSD30P08J00	J	Screw SW3P + S8S	AA
234	XBPSD26P12J00	J	Screw SW2.6 + 12S	AA
235	XBPSD30P05J00	J	Screw SW3P + 5S	AA
237	XHPSD30P06000	J	Screw S3P + 6S	AA
238	LX-RZ3001AEZZ	J	E Ring-3 (Curl)	AA
239	LX-WZ1042GE00	J	Washer CW2.7-7-0.5	AA
242	XWHJZ25-04050	J	Washer W2.6P-5-0.4	AA
244	XHPSD30P04WS0	J	Screw C3P + 4S	AA
245	XHPSD26P06000	J	Screw S2.6P + 6S	AA

MECHANICAL PARTS

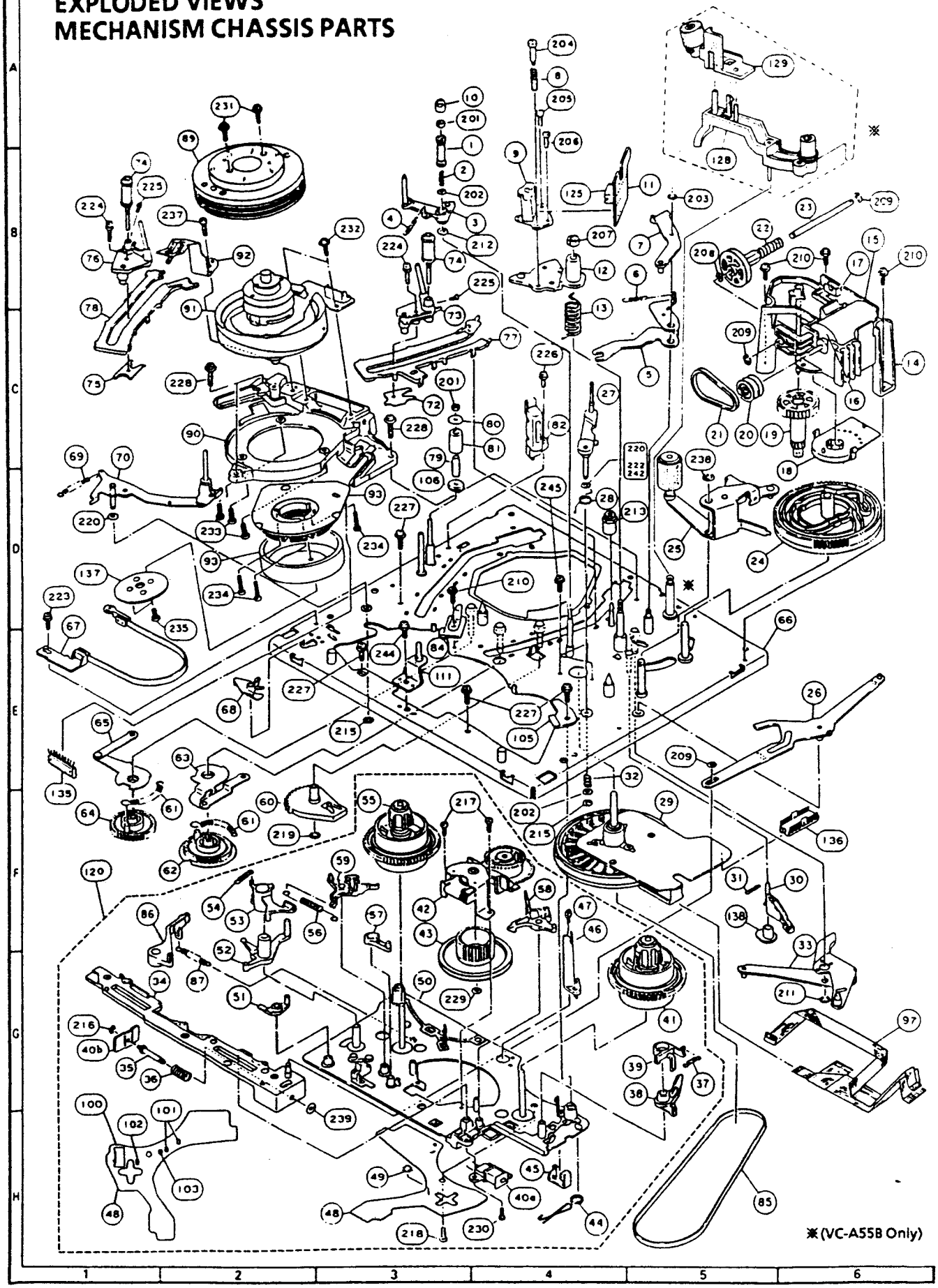
601	CCABA3084TEV0	V	Top Cabinet	AX
602	LX-HZ3040GEFF		Screw	AA
603	GCABB1134AJZZ	V	Frame Ass'y	AV
604	GCOVA1790AJZZ	V	Antenna Terminal Cover	AF
605	XEBSD40P12000		Screw	AA
606	XEBSD30P12000		Screw	AA
607	GBDYU3085AJFW	V	Bottom Plate	AN
608	PSPAZ0202GEZZ		Spacer	AC
609	LHLDZ1609GEZZ		Y/C PWB Holder	AA
610	LHLDZ1875AJZZ	V	Main PWB Holder	AC
611	TLABM2630AJZZ	V	Model Label (VC-A32B)	AD
611	TLABM2631AJZZ	V	Model Label (VC-A55B)	AD
612	XHPS330P06WS0		Screw	AA
613	XHPSD30P06WS0		Screw	AA
614	LX-HZ3056GEFD		Screw	AA
615	XJBSD30P16000		Screw	AA
617	LANGF9367AJFW	V	Cassette Fixing Metal	AB
618	PSPAZ0380AJZZ	V	Spacer	AA
619	QEARP0384AJFW	V	Converter Earth	AE
620	LHLDZ1624GEZZ		Trans Holder	AD
622	LHLDP1105GE00		LED Holder	AB
623	PSPAZ0349AJZZ	V	Fluorescent Display Holder	AB
624	LANGF9554AJFW	V	Converter Angle	AD
625	XHPSD40P12000		Screw	AA
626	XHPSD40P06000		Screw	AA

Ref. No.	Part No.	*	Description	Code
627	PFLT-0016AJZZ	V	Foot Rubber	AB
628	TCAUH0015PEZZ		Caution Label	AC

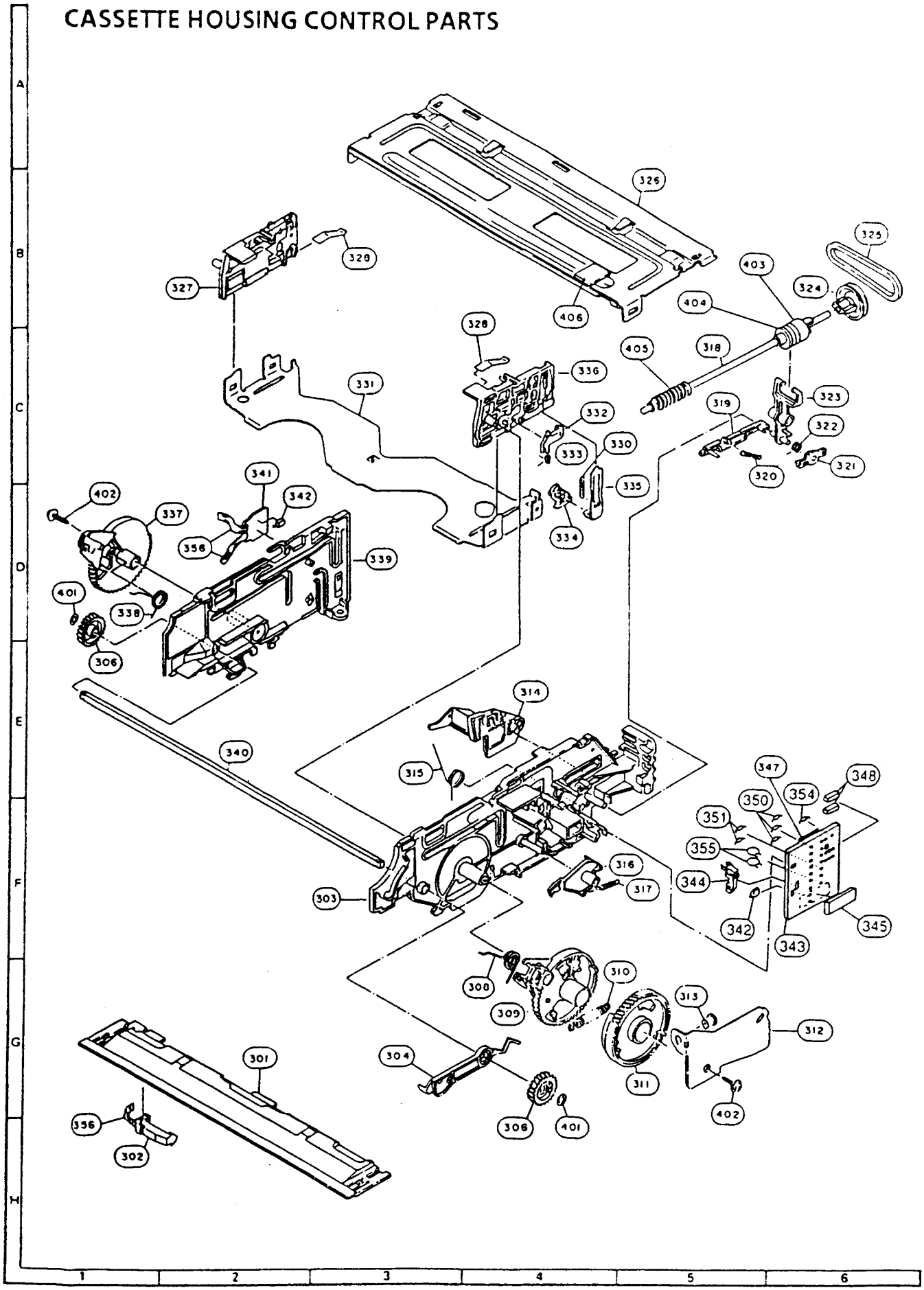
FRONT PARTS

501	CPNLC1788TEV0	V	Front Panel Ass'y (VC-A32B)	BD
501	CPNLC1784TEV1	V	Front Panel Ass'y (VC-A55B)	BD
502	HDECQ0978AJSA	V	Decoration, Window	AK
503	HDECQ1050AJSA	V	Cassette Flap (VC-A32B)	AN
503	HDECQ1039AJSA	V	Cassette Flap (VC-A55B)	AN
504	CBTN-2546TEV1	V	Button, Power/Eject	AF
505	JBTN-2539AJSA	V	Button, Operation (A)	AL
506	JBTN-2565AJSA	V	Button, Operation (C)	AE
507	HBDGB1008AJSA	V	Badge "SHARP"	AE
508	MSPRD0103AJFJ	V	Cassete Spring	AB
510	PCOVU9216AJSA	V	R/C Filter	AC

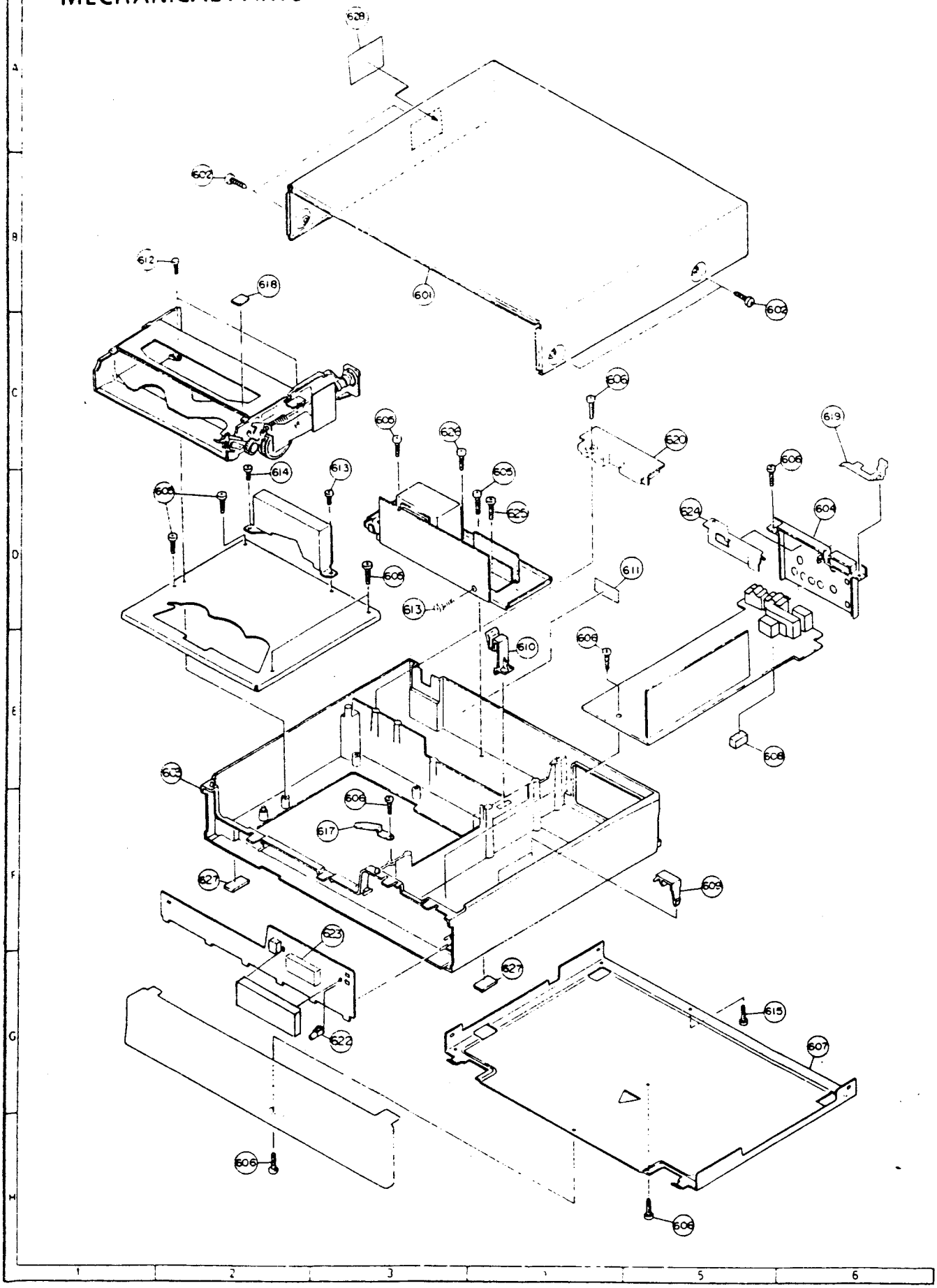
EXPLODED VIEWS
MECHANISM CHASSIS PARTS



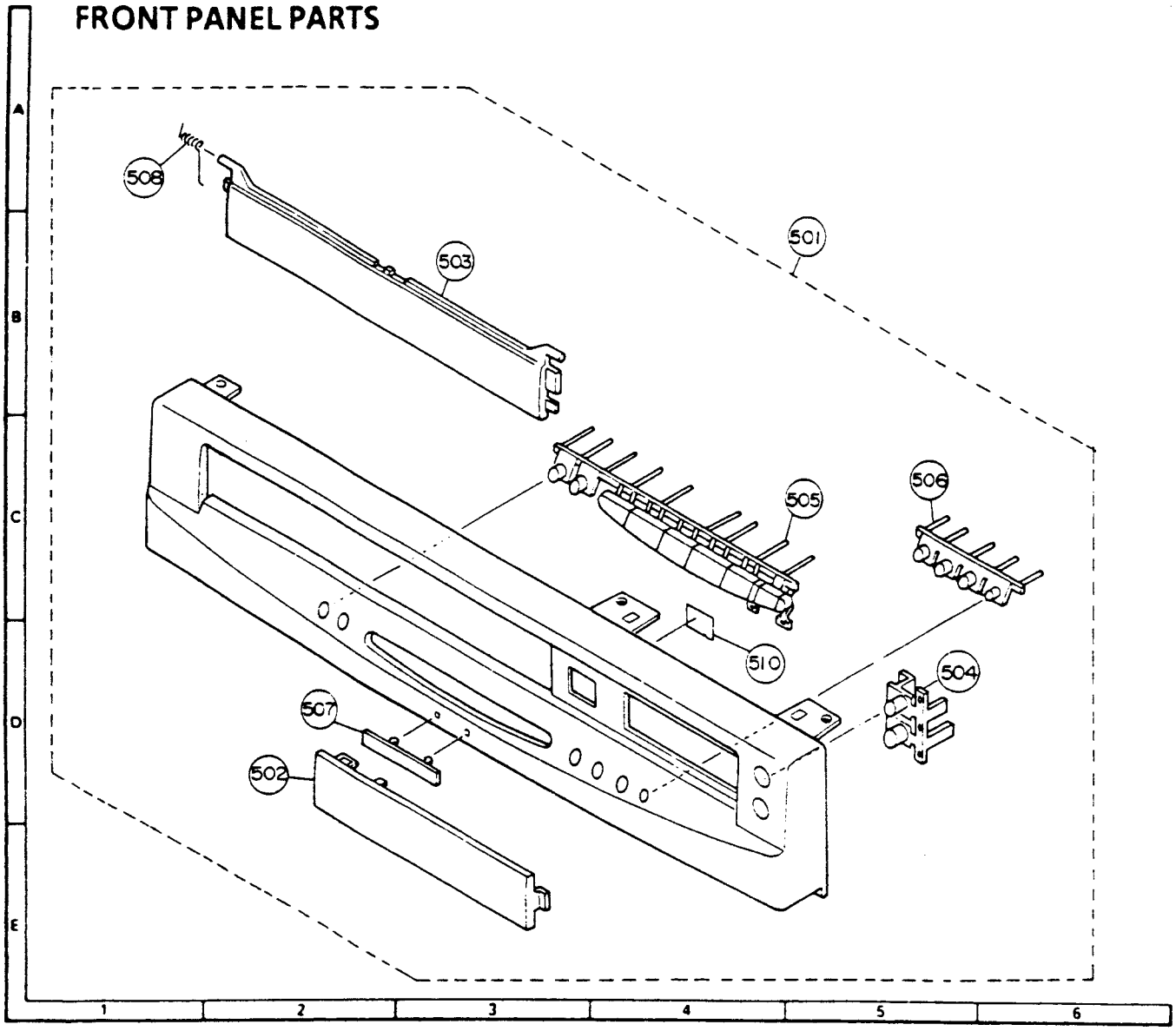
CASSETTE HOUSING CONTROL PARTS



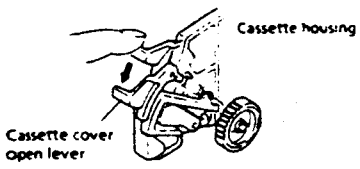
MECHANICAL PARTS



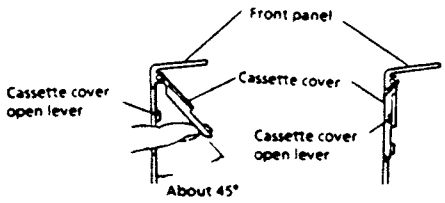
FRONT PANEL PARTS



PRECAUTIONS ON FRONT PANEL SET-UP

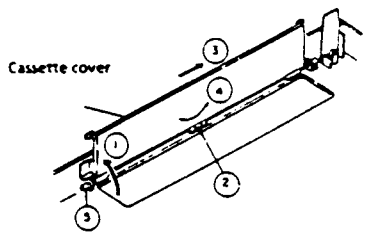


Before attaching the front panel in position, make sure that the cassette cover open lever is in its right place (lowermost). If it is out of position, push it down with a finger.



Keep the cassette over about 45° open and make sure that the cassette cover open lever is between the front panel and the cassette cover. Now fix the front panel in place.

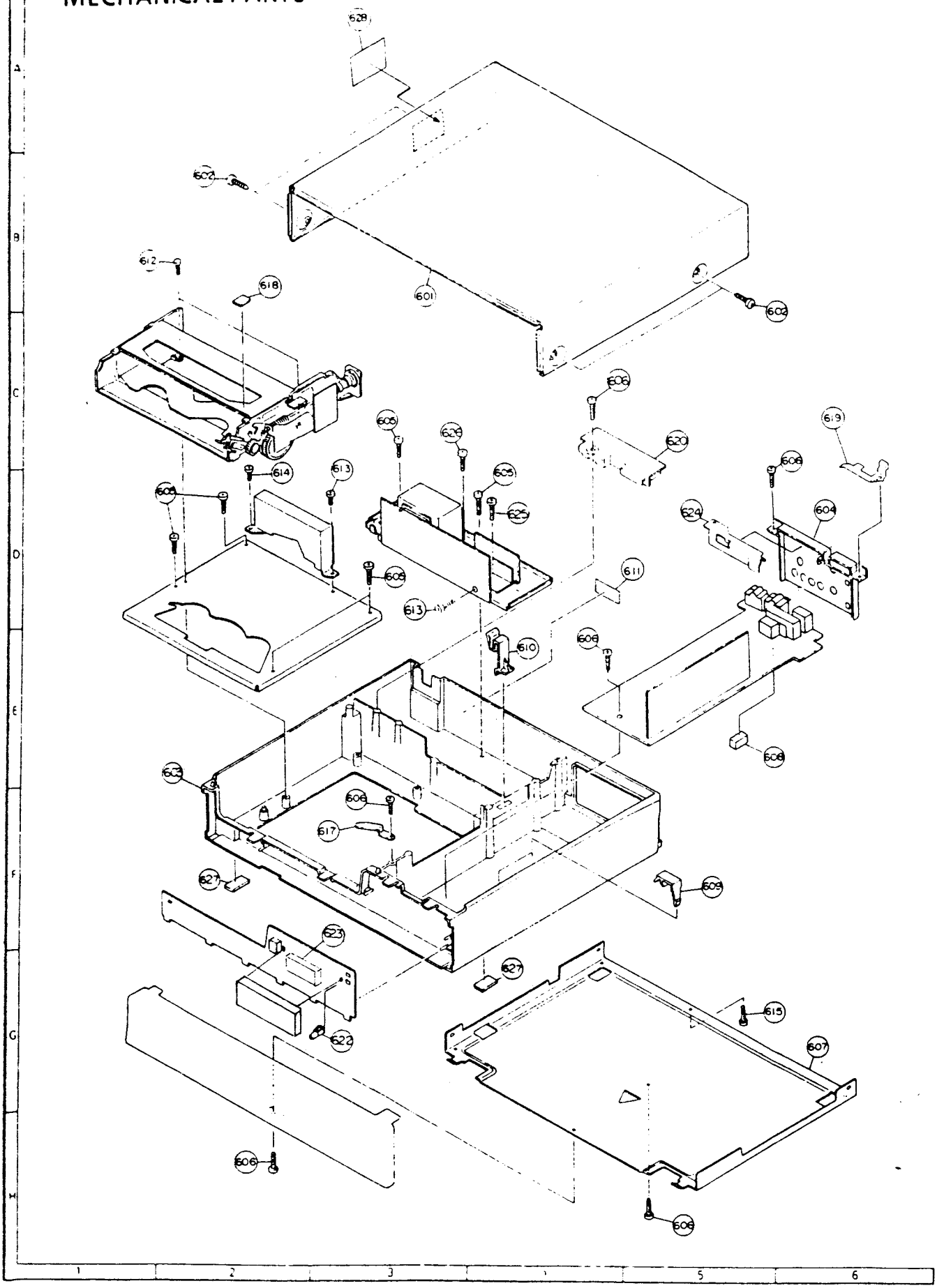
Do not mount the front panel with the cassette cover tilted too open. Otherwise the cassette cover might wrongly run on the cassette



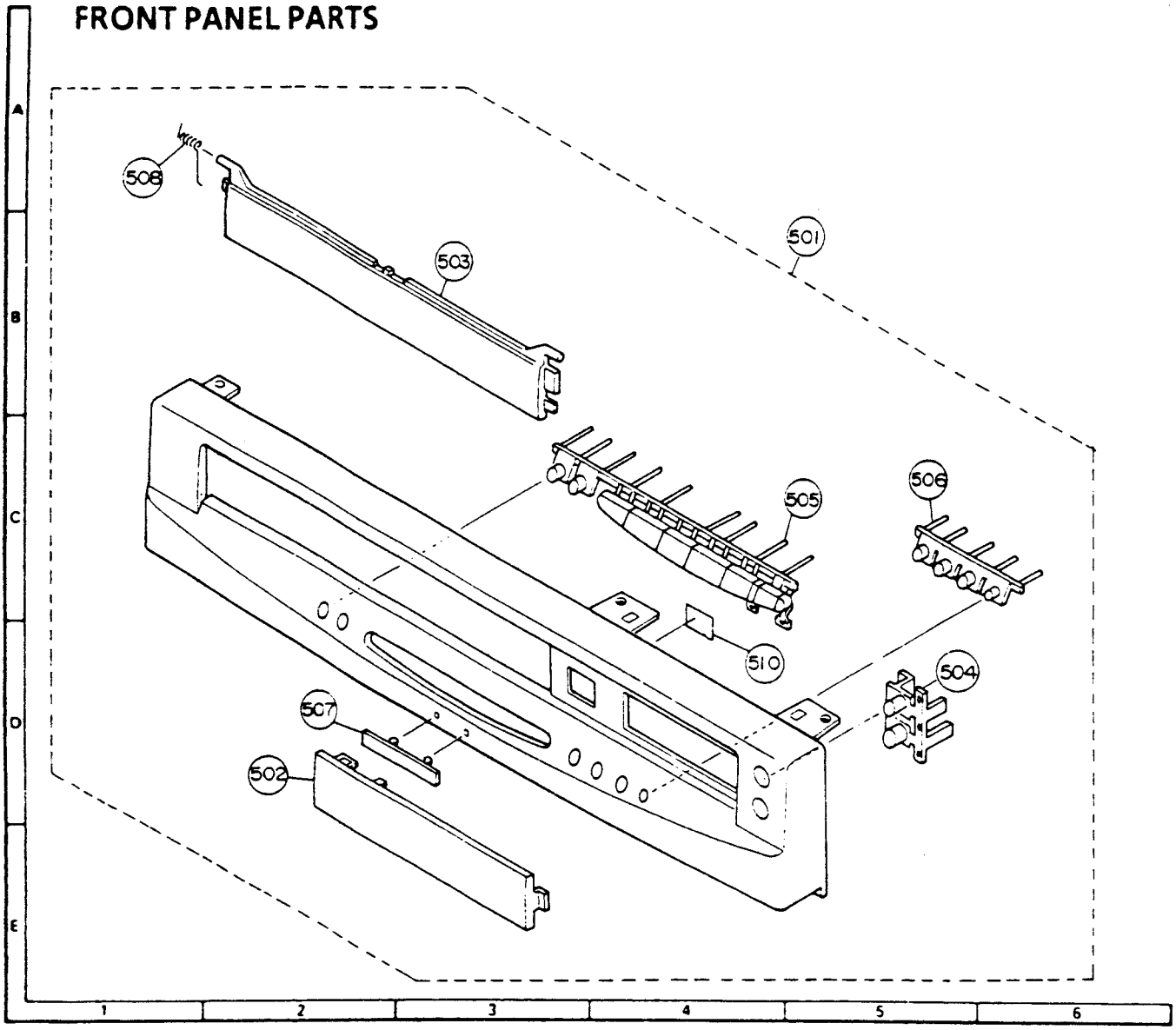
Removing the cassette compartment cover.

① Open the cassette compartment cover fully.
② Remove the center positioner.
③ Slide the cover to the right.
④ Slightly bend the cover.
⑤ Draw out the left-side rod.

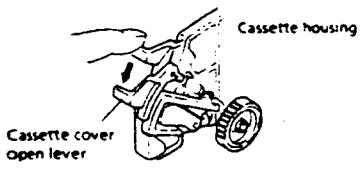
MECHANICAL PARTS



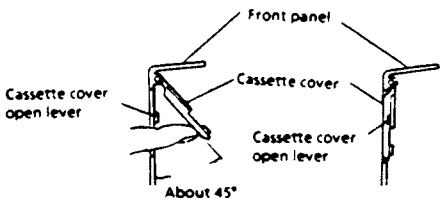
FRONT PANEL PARTS



PRECAUTIONS ON FRONT PANEL SET-UP

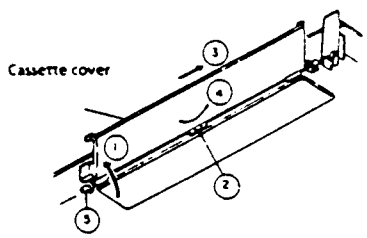


Before attaching the front panel in position, make sure that the cassette cover open lever is in its right place (lowermost). If it is out of position, push it down with a finger.



Keep the cassette over about 45° open and make sure that the cassette cover open lever is between the front panel and the cassette cover. Now fix the front panel in place.

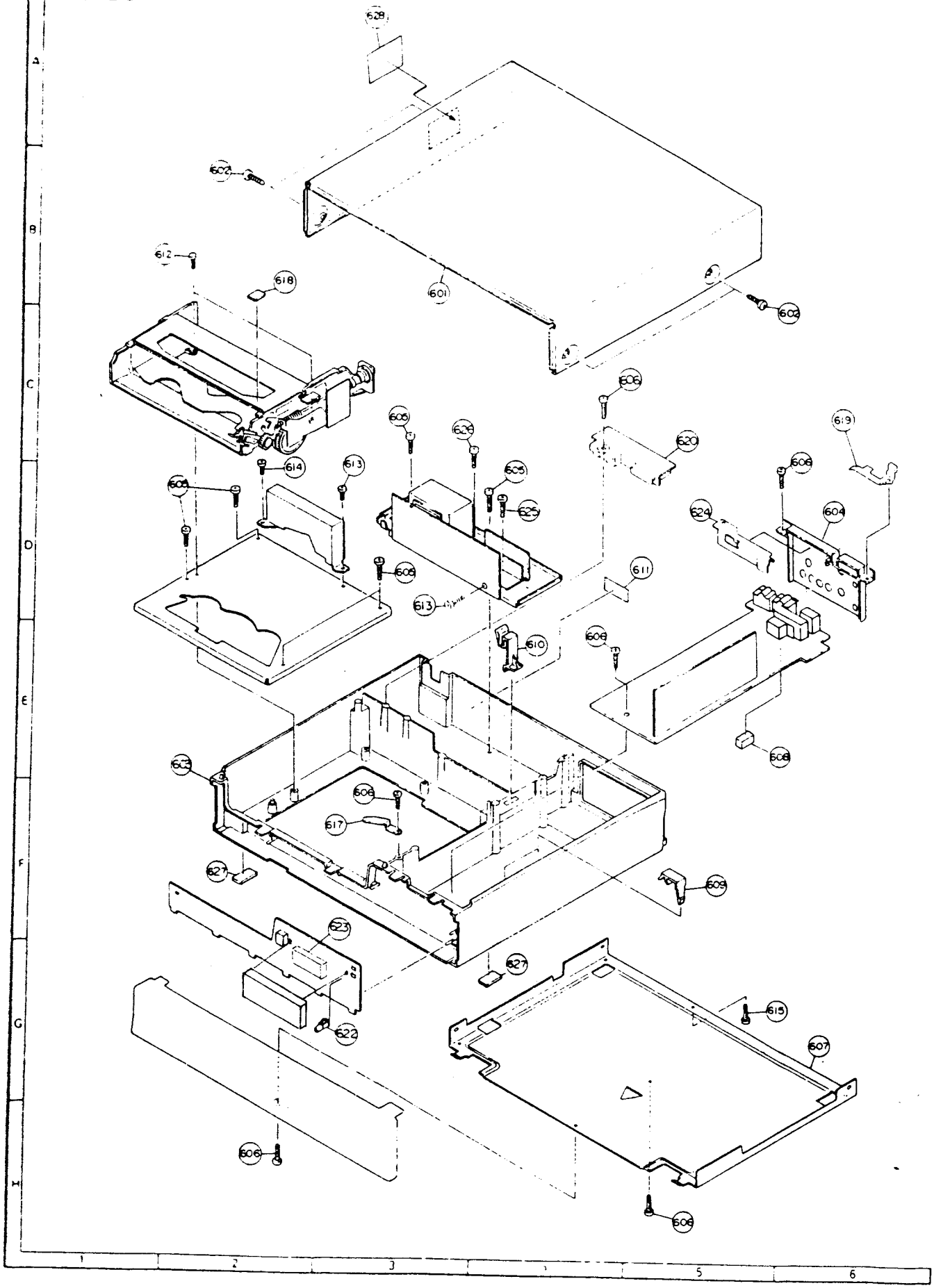
Do not mount the front panel with the cassette cover tilted too open. Otherwise the cassette cover might wrongly run on the cassette



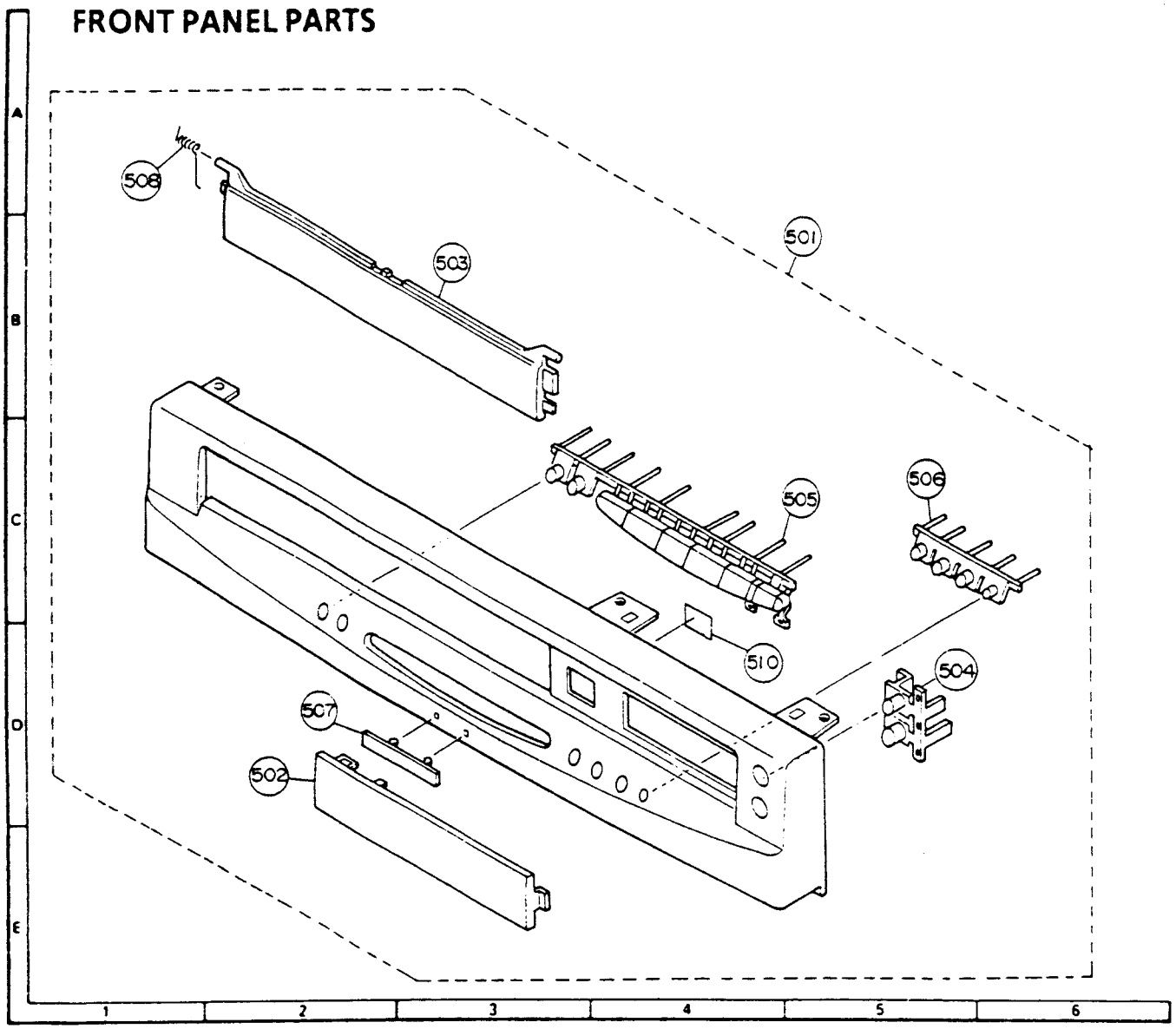
Removing the cassette compartment cover.

① Open the cassette compartment cover fully.
② Remove the center positioner.
③ Slide the cover to the right.
④ Slightly bend the cover.
⑤ Draw out the left-side rod.

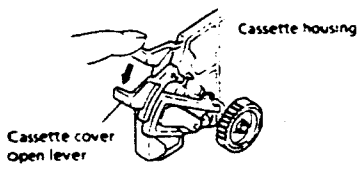
MECHANICAL PARTS



FRONT PANEL PARTS



PRECAUTIONS ON FRONT PANEL SET-UP



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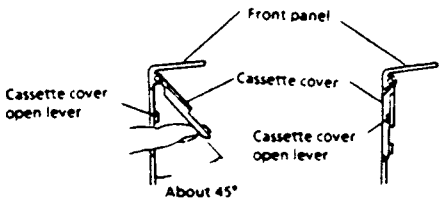

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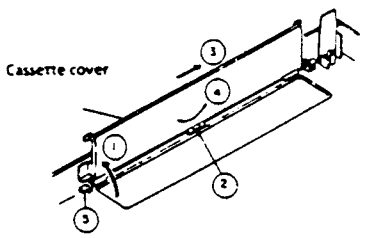

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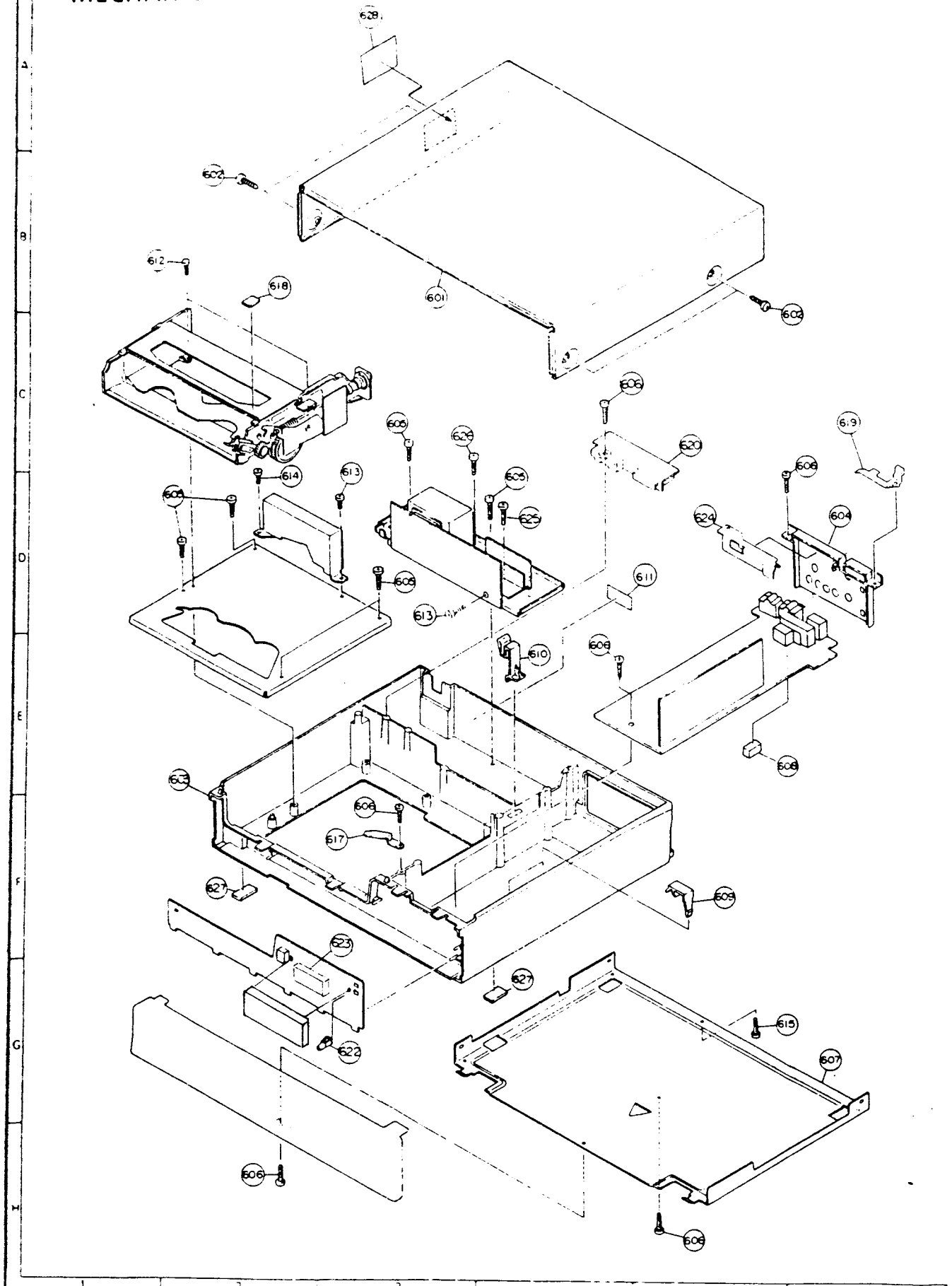
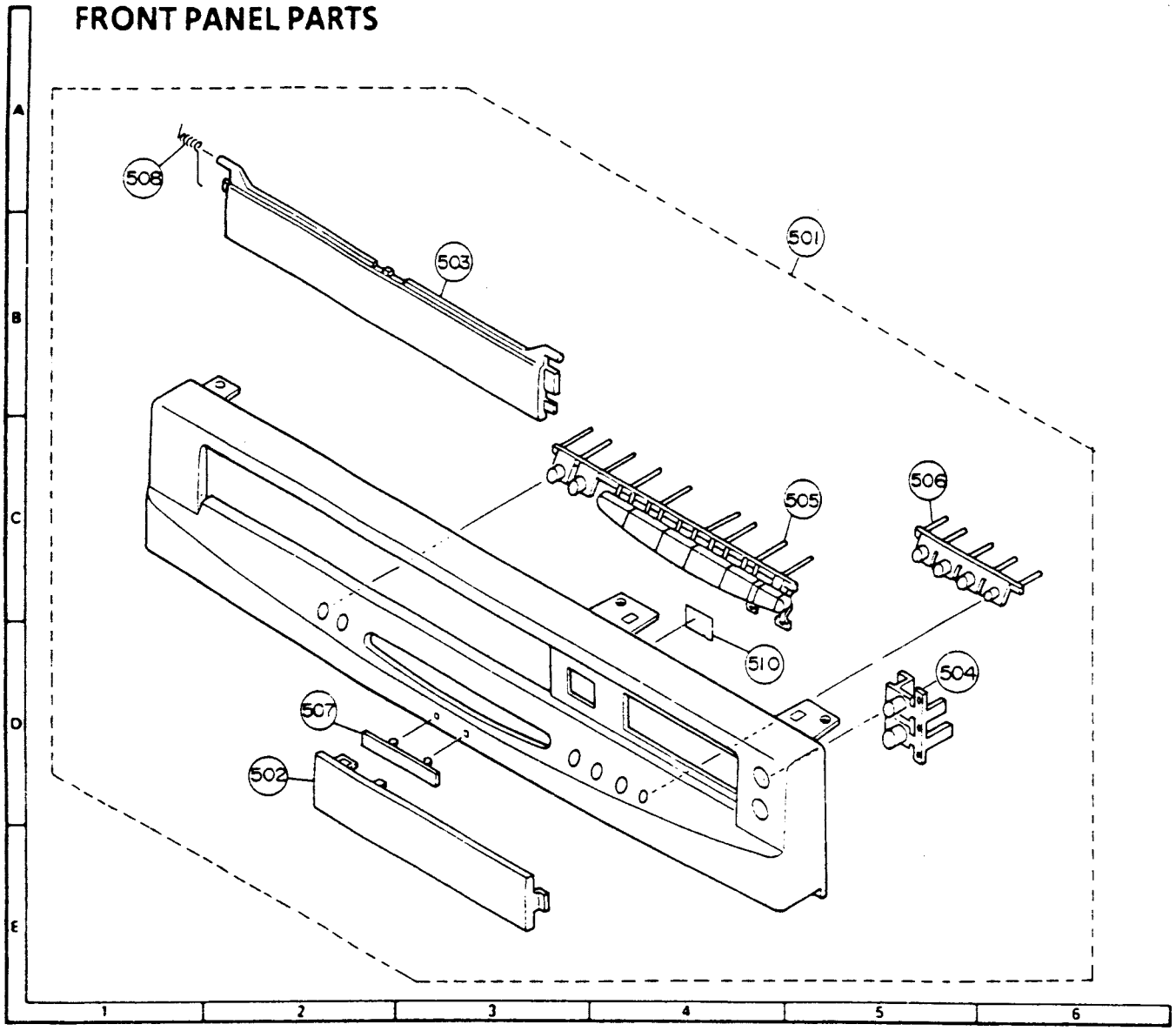
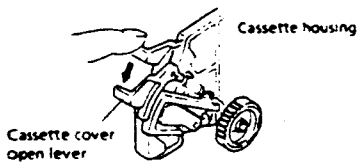
MECHANICAL PARTS



FRONT PANEL PARTS



PRECAUTIONS ON FRONT PANEL SET-UP



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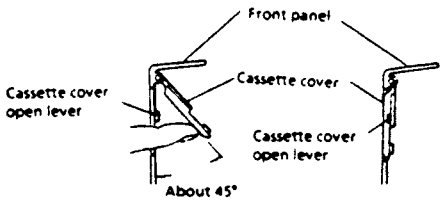

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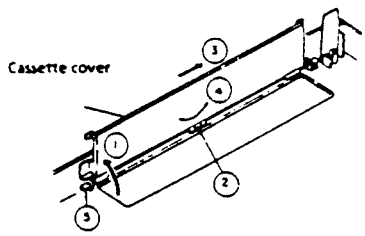

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④ Slightly bend the cover.
⑤ Draw out the left-side rod.

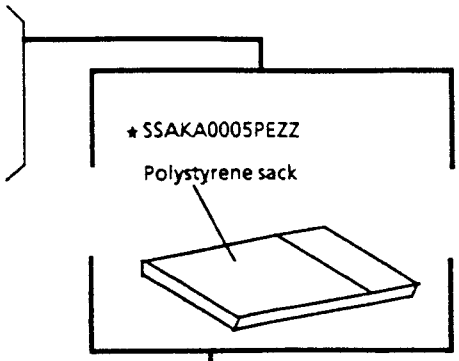
PACKING OF THE SET

• Setting position of the Knobs

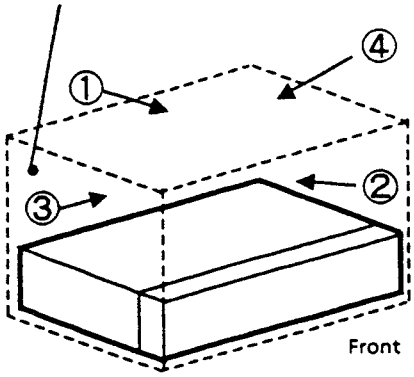
Test signal	at "OFF" position	SYSTEM	at "B/G" position

Accessories

★ TINS-2222AJZZ Operation manual (VC-A32B)
★ TINS-2223AJZZ Operation manual (VC-A55B)
★ QCNW-2702GEZZ 75ohm coaxial cable
Battery

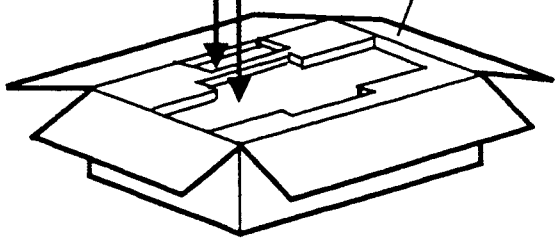


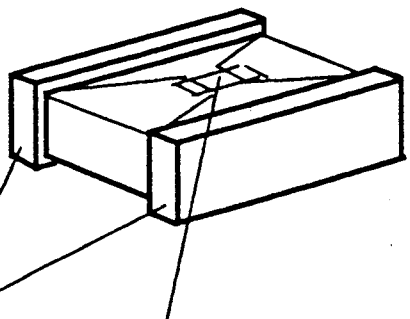
★SPAKP0051UMZZ
Polystyrene sack



RRMCG0960GESA (VC-A32B)
RRMCG0963GESA (VC-A55B)
Infrared remote control unit

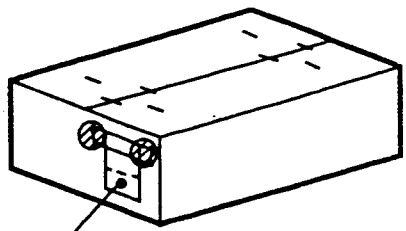
★ SPAKC2417AJZZ (VC-A32B)
★ SPAKC2422AJZZ (VC-A55B)
Packing case





★SPAKX0795UMZZ
Buffer material

Fix with craft tape



★TLABK0005AJZZ
No.Card

★ Not Replacement Items